American College of Radiology ACR Appropriateness Criteria®

Nonvariceal Upper Gastrointestinal Bleeding

Variant 1: Adult. Suspected nonvariceal upper gastrointestinal bleeding; no endoscopy performed. Initial imaging.

Procedure	Appropr Cates	iateness	SOE	Adults RR	L	Peds RRL	Rating	Median					Tabu				
CTA abdomen and pelvis without and with IV contrast	Usua approp	ally	Moderate	ଡଡ଼ଡଡ଼ 10-3 mSv			9	9	0	0	0	0	0	1	3	2	7
	•		References		-	Study	Quality			•			· ·				
			22 (25023179)				3										
			19 (23192375)				M										
			18 (28754326)				3										
			24 (31987743)				4										
			21 (25650332)				1										
			7 (29883267)				4										
			20 (31346741)				4										
			25 (31363814)				3										
			23 (33449577)				3										
Arteriography visceral	May approp	be priate	Limited	��� 1-10 mSv	0		6	6	0	0	0	0	5	5	1	4	0
			References		•	Study	Quality			•				•			
			2 (26303132)			_	4										
			16 (33893060)			Inac	lequate										
			17 (32650690)				3										
			14 (30115434)				4										
			15 (33317472)				3										

CT abdomen and pelvis without and with IV contrast	Usually no appropriat	Expert Consensus	୫୫୫୫ 10-30 mSv	����� 10-30 mSv [ped]	3	3	1	5	8	1	0	0	0	0	0
CTA abdomen with IV contrast	Usually no appropriate	Expert Consensus	��� 1-10 mSv		3	3	2	4	9	0	0	0	0	0	0
CTA abdomen and pelvis with IV contrast	Usually no appropriate	Expert Consensus	���� 10-30 mSv		3	3	0	4	7	1	2	1	0	0	0
CT enterography	Usually no	Limited	���⊕ 10-30 mSv	���� 3- 10 mSv [ped]	3	3	3	3	2	2	2	0	1	0	0
		References		Study	Quality										
		 5 (34597220)			4										
CTA chest without and with IV contrast	Usually no appropriate	Expert Consensus	��� 1-10 mSv		3	3	2	3	4	0	4	0	0	0	0
RBC scan abdomen and pelvis	Usually no appropriate	Expert Consensus	��� 1-10 mSv		3	3	2	3	4	2	1	1	0	0	0
CTA abdomen without and with IV contrast	Usually no appropriat	Expert Consensus	���� 10-30 mSv		3	3	2	4	4	1	3	1	0	0	0
CT abdomen with IV contrast	Usually no appropriat	Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	2	2	3	4	1	3	1	0	1	0	0
CT abdomen without IV contrast	Usually no appropriate	Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	2	2	4	4	4	1	0	0	0	0	0
CT abdomen without and with IV contrast	Usually no appropriat	Expert Consensus	୫୫୫୫ 10-30 mSv	����� 10-30 mSv [ped]	2	2	3	4	1	2	2	0	1	0	0
CT abdomen and pelvis with IV contrast	Usually no appropriat	Expert Consensus	⊕⊕⊕ 1-10 mSv	���� 3- 10 mSv [ped]	2	2	2	5	1	2	2	0	1	0	0
CT abdomen and pelvis without IV contrast	Usually no appropriat	Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	2	2	4	4	3	1	1	0	0	0	0

CTA chest with IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	2	2	3	4	4	1	1	0	0	0	0
MR enterography	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	2	2	5	4	2	1	1	0	0	0	0
Fluoroscopy upper GI series	Usually not appropriate	Expert Consensus	≎≎≎ 1-10 mSv	��� 0.3- 3 mSv [ped]	1	1	7	4	2	0	0	0	0	0	0

Variant 2: Adult. Endoscopy confirms nonvariceal upper gastrointestinal bleeding with a clear source, but treatment not possible or continued bleeding after endoscopic treatment. Initial imaging.

D 1	Appropriateness	COE	A L L DDI	D I DDI	D 4	3.6 11			F	inal T	Гabu	latior	ns		
Procedure	Category	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
Arteriography visceral	Usually appropriate	Limited	��� 1-10 mSv		8	8	0	0	0	0	0	0	4	3	6

References	Study Quality
27 (26912065)	4
31 (26190186)	4
4 (26987672)	4
34 (27178757)	4
38 (32274535)	4
30 (32282712)	2
29 (34022402)	4
26 (34313237)	4
28 (27812392)	4
35 (28270041)	3
40 (30033142)	4
39 (26766321)	4
33 (31877509)	4
37 (25319738)	4
36 (25581622)	3

		32 (25712846)			4										
CTA abdomen and pelvis without and with IV contrast	Usua approp	Limited	≎≎≎≎ 10-30 mSv		8	8	1	0	0	0	1	0	5	8	0
		References		Study	Quality										
		43 (28248993)			4										
		42 (27469919)			4										
		7 (29883267)			4										
CTA abdomen without and with IV contrast	May approp	Expert Consensus	≎≎≎≎ 10-30 mSv		6	6	0	0	0	1	5	8	1	0	0
CTA chest without and with IV contrast	May approp	Expert Consensus	≎≎≎ 1-10 mSv		4	4	2	0	3	3	5	0	0	0	0
CT abdomen without and with IV contrast	Usually approp	Expert Consensus	୫୫୫୫ 10-30 mSv	����� 10-30 mSv [ped]	3	3	2	4	2	3	1	0	0	0	1
CT abdomen and pelvis with IV contrast	Usually approp	Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	3	3	2	4	4	1	1	0	1	0	0
CT abdomen and pelvis without and with IV contrast	Usually approp	Expert Consensus	୫୫୫୫ 10-30 mSv	����� 10-30 mSv [ped]	3	3	2	4	2	3	1	0	0	0	1
CTA abdomen with IV contrast	Usually approp	Expert Consensus	≎≎≎ 1-10 mSv		3	3	3	3	5	4	0	0	0	0	0
CTA abdomen and pelvis with IV contrast	Usually approp	Expert Consensus	≎≎≎≎ 10-30 mSv		3	3	2	2	6	5	0	0	0	0	0
CTA chest with IV contrast	Usually approp	Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	3	3	2	2	6	3	0	0	0	0	0
CT enterography	Usually approp	Limited	���� 10-30 mSv	���� 3- 10 mSv [ped]	3	3	3	2	4	1	3	0	0	0	0

References Study Quality
41 (23789659) 4

5 (34597220) 4 CT abdomen with IV contrast **₩₩₩** 3-**⊕⊕⊕** 1-10 Usually not Expert 2 5 10 mSv 2 2 3 2 0 0 1 0 0 mSv appropriate Consensus [ped] **☆☆☆☆ 3**-CT abdomen without IV contrast Usually not **२० २०** 1-10 Expert 2 3 7 0 0 0 10 mSv 2 2 0 1 0 appropriate mSv Consensus [ped] CT abdomen and pelvis without **���� 3**-Usually not **२० २०** 1-10 Expert 10 mSv IV contrast 2 3 0 0 2 6 2 1 0 0 appropriate mSv Consensus [ped] MR enterography Usually not Expert O 0 mSv O 0 mSv 2 2 3 7 3 0 0 0 0 0 appropriate [ped] Consensus RBC scan abdomen and pelvis **२०२०** 1-10 Usually not Expert 2 5 5 0 0 0 2 1 0 1 1 appropriate mSv Consensus Fluoroscopy upper GI series **���** 0.3-**⊕⊕⊕** 1-10 Usually not **Expert** 7 3 mSv 1 4 2 0 0 0 0 0 0 appropriate mSv Consensus [ped]

Variant 3: Adult. Endoscopy confirms nonvariceal upper gastrointestinal bleeding without a clear source. Initial imaging.

D 1	Appropri	ateness	COF	4 1 14 DDI	D I DDI	D .:	3.6.31			F	inal [Fabu	latio	ns		
Procedure	Catego	ory	SOE	Adults RRI	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
CTA abdomen and pelvis without and with IV contrast	Usual appropi		Limited	���� 10-3 mSv	0	8	8	0	0	0	0	0	0	6	3	4
			References		Study	Quality										
			43 (28248993)		Study Quality 4 4											
			46 (28189213)			4										
			48 (25782338)			4										
			47 (31786734)			4										
Arteriography visceral	May lappropi	be riate	Limited	��� 1-10 mSv		6	6	0	0	0	0	5	3	1	1	3
			References		Study	Quality										

46 (28189213)	4
44 (32405731)	3
45 (24143308)	4

RBC scan abdomen and pelvis	May be appropriate	Expert Consensus	��� 1-10 mSv		5	5	0	0	0	2	10	3	0	0	0
CT enterography	May be appropriate	Limited	���� 10-30 mSv	���� 3- 10 mSv [ped]	4	4	1	1	4	1	5	1	0	0	0
		References		Study	Quality				•			•			
		41 (23789659)			4										
CTA chest without and with IV contrast	May be appropriate	Expert Consensus	≎≎≎ 1-10 mSv		4	4	2	3	1	3	3	1	0	0	0
CT abdomen and pelvis with IV contrast	Usually not appropriate	Expert Consensus	��⊕ 1-10 mSv	���� 3- 10 mSv [ped]	3	3	3	3	4	1	0	2	0	0	0
CT abdomen and pelvis without and with IV contrast	Usually not appropriate	Expert Consensus	���� 10-30 mSv	����� 10-30 mSv [ped]	3	3	2	4	1	3	2	0	0	1	0
CTA abdomen and pelvis with IV contrast	Usually not appropriate	Expert Consensus	���� 10-30 mSv		3	3	1	3	7	4	0	0	0	0	0
CTA chest with IV contrast	Usually not appropriate	Expert Consensus	��⊕ 1-10 mSv	���� 3- 10 mSv [ped]	3	3	2	4	3	2	2	0	0	0	0
CTA abdomen without and with IV contrast	Usually not appropriate	Expert Consensus	���� 10-30 mSv		3	3	3	3	4	1	3	1	0	0	0
CT abdomen with IV contrast	Usually not appropriate	Expert Consensus	��⊕ 1-10 mSv	���� 3- 10 mSv [ped]	2	2	3	4	4	0	1	1	0	0	0
CT abdomen without IV contrast	Usually not appropriate	Expert Consensus	��⊕ 1-10 mSv	���� 3- 10 mSv [ped]	2	2	3	4	5	1	0	0	0	0	0

CT abdomen without and with IV contrast	Usually not appropriate	Expert Consensus	୫୫୫୫ 10-30 mSv	≎≎≎≎≎ 10-30 mSv [ped]	2	2	2	5	1	3	1	0	1	0	0
CT abdomen and pelvis without IV contrast	Usually not appropriate	Expert Consensus	୫୫୫ 1-10 mSv	���� 3- 10 mSv [ped]	2	2	3	4	5	1	0	0	0	0	0
CTA abdomen with IV contrast	Usually not appropriate	Expert Consensus	≎≎≎ 1-10 mSv		2	2	3	6	5	1	0	0	0	0	0
MR enterography	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	2	2	2	6	4	0	1	0	0	0	0
Fluoroscopy upper GI series	Usually not appropriate	Expert Consensus	��� 1-10 mSv	��� 0.3- 3 mSv [ped]	1	1	8	4	1	0	0	0	0	0	0

Variant 4: Adult. Nonvariceal upper gastrointestinal bleeding; negative endoscopy. Initial imaging.

ъ	Appropri	iateness	COE	4 1 14 DD		D I DDI	D 4	3.6.11			I	inal '	Tabu	latio	ns		
Procedure	Categ		SOE	Adults RR	KL .	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
CTA abdomen and pelvis without and with IV contrast	Usua approp		Strong	���� 10- mSv	30		8	8	0	0	0	0	0	1	4	4	4
	•		References 57 (20621429) 19 (23192375)			Study	Quality										
			57 (20621429)			2											
			19 (23192375) 55 (25141313)				M										
			19 (23192375)				3										
			19 (23192375) 55 (25141313) 56 (25248830)				2										
			58 (22363142)				3										
CT enterography	Usua approp		Moderate	���� 10- mSv	30	���� 3- 10 mSv [ped]	7	7	0	0	0	2	0	3	7	3	0
			References			Study	Quality										
			54 (21642417)				2										
			52 (22098076)				2										

			5 (34597220)			4										
			53 (26858753)			4				1						
MR enterography	May approp		Strong	O 0 mSv	O 0 mSv [ped]	6	6	0	0	0	2	4	2	4	3	0
			References		Study	Quality										
			60 (20132082)			3										
			61 (22528671)			2										
			59 (28668417)			2	_	_								
RBC scan abdomen and pelvis	May approp		Limited	≎≎≎ 1-10 mSv		6	6	0	0	0	3	3	2	4	0	1
			References		Study	Quality										
			62 (23407907)			3										
			63 (21757912)			4										
			64 (30526506)			3		_								
CT abdomen and pelvis without and with IV contrast	May approp		Expert Consensus	���� 10-30 mSv	⊕⊕⊕⊕⊕ 10-30 mSv [ped]	5	5	0	1	2	3	7	1	1	0	0
CTA abdomen without and with IV contrast	May approp (Disagree	riate	Expert Opinion	���� 10-30 mSv	•	5	5	2	4	6	0	1	0	2	0	0
CT abdomen with IV contrast	Usually approp		Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	3	3	2	4	4	1	2	0	0	0	0
CT abdomen without and with IV contrast	Usually approp		Expert Consensus	���� 10-30 mSv	99999 10-30 mSv [ped]	3	3	2	4	2	3	0	2	0	0	0
CT abdomen and pelvis with IV contrast	Usually approp		Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	3	3	2	1	6	1	2	0	1	0	0
CT abdomen and pelvis without IV contrast	Usually approp		Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	3	3	4	2	5	1	1	0	0	0	0

CTA abdomen with IV contrast	Usually no appropriate		��� 1-10 mSv		3	3	3	4	8	0	0	0	0	0	0
CTA abdomen and pelvis with IV contrast	Usually no appropriate		���� 10-30 mSv		3	3	1	3	10	0	0	0	1	0	0
Arteriography visceral	Usually no appropriate		��� 1-10 mSv		3	3	1	4	4	2	3	1	0	0	0
		References		Study											
		51 (23754065)	51 (23754065) 4												
		49 (22302119) 4													
		50 (28278445)		4											
CTA chest without and with IV contrast	Usually no appropriate		≎≎≎ 1-10 mSv		3	3	2	3	5	0	2	1	0	0	0
CT abdomen without IV contrast	Usually no appropriate		��� 1-10 mSv	���� 3- 10 mSv [ped]	2	2	4	3	4	2	0	0	0	0	0
CTA chest with IV contrast	Usually no appropriate		��� 1-10 mSv	≎≎≎≎ 3- 10 mSv [ped]	2	2	3	4	4	1	1	0	0	0	0
Fluoroscopy upper GI series	Usually no appropriate		��� 1-10 mSv	��� 0.3- 3 mSv [ped]	1	1	7	5	1	0	0	0	0	0	0

Variant 5: Adult. Postsurgical or traumatic causes of nonvariceal upper gastrointestinal bleeding. Endoscopy is contraindicated. Initial imaging.

Procedure	Appropriateness	COF	A L LL DDY	Peds RRL	Rating	3.6 11	Final Tabulations												
	Category	SOE	Adults RRL			Median	1	2	3	4	5	6	7	8	9				
Arteriography visceral	Usually appropriate	Limited	≎≎≎ 1-10 mSv		7	7	0	1	0	0	4	0	4	2	2				

References	Study Quality
27 (26912065)	4
4 (26987672)	4
39 (26766321)	4

			65 (33861138)			3										
CTA abdomen and pelvis without and with IV contrast	Usua approp		Limited	���� 10-30 mSv)	7	7	0	0	0	0	2	0	5	2	4
			References		Study	y Quality		•	•		•					
			69 (21336192)			2										
			71 (27423720)			4										
			70 (33530944)			4										
CT abdomen and pelvis with IV contrast	May approp		Limited	��� 1-10 mSv	���� 3- 10 mSv [ped]	5	5	1	0	0	1	8	4	1	0	0
			References		Study Quality											
			66 (34945741)		Inac											
CT abdomen and pelvis without and with IV contrast	May approp		Expert Consensus	ଡେଡେଡେ 10-30 mSv	⊕⊕⊕⊕⊕ 10-30 mSv [ped]	5	5	1	1	0	4	6	2	1	0	0
CTA chest without and with IV contrast	May approp		Expert Consensus	��� 1-10 mSv		5	5	0	2	0	5	8	0	0	0	0
CT enterography	May approp		Limited	���� 10-30 mSv	0	4	4	1	2	2	3	3	2	0	0	0
		References			Study Quality											
		5 (34597220)			4											
CT abdomen with IV contrast	Usually approp		Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	3	3	4	2	9	0	0	0	0	0	0
CT abdomen without IV contrast	Usually approp		Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	3	3	2	4	5	1	1	0	0	0	0
CT abdomen without and with IV contrast	Usually approp		Limited	ଡଡ଼େଡ 10-30 mSv	⊕⊕⊕⊕⊕ 10-30 mSv [ped]	3	3	3	3	5	3	1	0	0	0	0
	Referenc				Study	y Quality										

67 (24381048)

68 (23392987) 4

CT abdomen and pelvis without IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv	≎≎≎≎ 3- 10 mSv [ped]	3	3	1	5	5	1	1	0	0	0	0
CTA abdomen with IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv		3	3	3	3	8	1	0	0	0	0	0
CTA abdomen and pelvis with IV contrast	Usually not appropriate	Expert Consensus	���� 10-30 mSv		3	3	1	2	10	0	1	1	0	0	0
CTA abdomen without and with IV contrast	Usually not appropriate	Expert Consensus	���� 10-30 mSv		3	3	4	1	7	0	1	1	1	0	0
CTA chest with IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	2	2	2	5	3	1	1	0	1	0	0
Fluoroscopy upper GI series	Usually not appropriate	Expert Consensus	��� 1-10 mSv	��� 0.3- 3 mSv [ped]	2	2	5	6	1	0	1	0	0	0	0
RBC scan abdomen and pelvis	Usually not appropriate	Expert Consensus	≎≎≎ 1-10 mSv		2	2	2	6	2	1	1	1	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.