American College of Radiology
ACR Appropriateness Criteria®

Epigastric Pain

Variant 1: Epigastric pain with clinical suspicion for acid reflux or esophagitis or gastritis or peptic ulcer or duodenal ulcer. Initial imaging.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
Fluoroscopy biphasic esophagram	Usually appropriate	Limited	☢☢☢ 1-10 mSv		8	8	1	0	0	0	1	0	4	12	2

References	Study Quality
6 (23973101)	4
14 (16170017)	4
15 (6828761)	2
16 (6771981)	3

Fluoroscopy upper GI series	Usually appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢ 0.3-3 mSv [ped]	8	8	0	0	1	0	2	1	2	8	4

References	Study Quality
17 (18096527)	4

CT abdomen and pelvis with IV contrast	May be appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	6	6	0	1	0	0	6	10	2	1	0

References	Study Quality
12 (26562229)	4
8 (29571554)	4
9 (29190519)	3
11 (26598795)	3
7 (25117561)	4
10 (22277022)	4

Fluoroscopy single contrast esophagram	May be appropriate	Limited	☢☢☢ 1-10 mSv		6	6	1	0	0	0	3	7	8	1	0

References	Study Quality
12 (26562229)	4

CT abdomen with IV contrast	May be appropriate (Disagreement)	Expert Opinion	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	5	5	0	0	2	5	6	4	3	0	0

References	Study Quality
12 (26562229)	4

CT abdomen and pelvis without IV contrast	May be appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	4	4	2	2	4	6	4	2	0	0	0

References	Study Quality
12 (26562229)	4
8 (29571554)	4
9 (29190519)	3
11 (26598795)	3
7 (25117561)	4
10 (22277022)	4

CT abdomen without IV contrast	Usually not appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	3	3	2	3	6	5	3	1	0	0	0

References	Study Quality
12 (26562229)	4

CT abdomen without and with IV contrast	Usually not appropriate	Limited	☢☢☢☢ 10-30 mSv	☢☢☢☢☢ 10-30 mSv [ped]	3	3	6	3	5	1	3	0	0	0	0

References	Study Quality
12 (26562229)	4

CT abdomen with IV contrast multiphase	Usually not appropriate	Limited	☢☢☢☢ 10-30 mSv		3	3	3	5	2	3	4	0	0	0	1

References	Study Quality
12 (26562229)	4

CT abdomen and pelvis without and with IV contrast	Usually not appropriate	Limited	☢☢☢☢ 10-30 mSv	☢☢☢☢☢ 10-30 mSv [ped]	2	2	5	5	6	1	0	0	0	0	1

References	Study Quality
12 (26562229)	4
8 (29571554)	4
9 (29190519)	3
11 (26598795)	3
7 (25117561)	4
10 (22277022)	4

MRI abdomen without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	2	2	6	5	3	2	0	1	1	0	0
MRI abdomen without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	2	2	5	5	4	1	1	0	1	0	1
MRI abdomen without IV contrast with MRCP	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	2	2	9	2	3	2	0	1	0	1	0
MRI abdomen without and with IV contrast with MRCP	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	2	2	9	1	4	1	1	0	1	0	1
FDG-PET/CT skull base to mid-thigh	Usually not appropriate	Limited	☢☢☢☢ 10-30 mSv	☢☢☢☢ 3-10 mSv [ped]	1	1	14	0	2	0	0	0	0	0	2

References	Study Quality
13 (22919350)	3

Variant 2: Epigastric pain with clinical suspicion for gastric cancer. Initial imaging.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							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	0	1	0	0	1	2	2	9	3

References	Study Quality
12 (26562229)	4
8 (29571554)	4
19 (26280126)	4
7 (25117561)	4

Fluoroscopy upper GI series	Usually appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢ 0.3-3 mSv [ped]	7	7	1	0	1	0	1	4	4	7	0

References	Study Quality
17 (18096527)	4

CT abdomen with IV contrast	May be appropriate (Disagreement)	Expert Opinion	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	5	5	1	0	2	0	3	3	10	1	0

References	Study Quality
12 (26562229)	4
19 (26280126)	4

CT abdomen without IV contrast	May be appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	4	4	0	3	3	7	3	2	0	0	0

References	Study Quality
12 (26562229)	4
19 (26280126)	4

CT abdomen and pelvis without IV contrast	May be appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	4	4	2	0	3	5	5	2	0	0	1

References	Study Quality
12 (26562229)	4
8 (29571554)	4
19 (26280126)	4
7 (25117561)	4

CT abdomen with IV contrast multiphase	May be appropriate	Limited	☢☢☢☢ 10-30 mSv		4	4	2	0	5	4	5	0	1	0	1

References	Study Quality

		12 (26562229)		4													
CT abdomen and pelvis without and with IV contrast	Usually not appropriate	Limited	☢☢☢☢ 10-30 mSv	☢☢☢☢☢ 10-30 mSv [ped]	3	3	2	5	4	1	4	0	1	0	1
		References		Study Quality													
		12 (26562229)		4													
		8 (29571554)		4													
		19 (26280126)		4													
		7 (25117561)		4													
CT abdomen without and with IV contrast	Usually not appropriate	Limited	☢☢☢☢ 10-30 mSv	☢☢☢☢☢ 10-30 mSv [ped]	2	2	3	7	3	2	2	0	1	0	0
		References		Study Quality													
		12 (26562229)		4													
		19 (26280126)		4													
Fluoroscopy single contrast esophagram	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv		2	2	9	2	4	1	1	0	0	0	1
Fluoroscopy biphasic esophagram	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv		2	2	9	4	6	0	0	0	0	0	1
MRI abdomen without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	2	2	7	11	2	0	0	0	0	0	0
MRI abdomen without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	2	2	5	13	2	0	0	0	0	0	0
MRI abdomen without IV contrast with MRCP	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	2	2	7	4	3	0	2	1	1	0	0
MRI abdomen without and with IV contrast with MRCP	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	2	2	7	11	2	0	0	0	0	0	0
FDG-PET/CT skull base to mid-thigh	Usually not appropriate	Expert Consensus	☢☢☢☢ 10-30 mSv	☢☢☢☢ 3-10 mSv [ped]	2	2	8	9	3	0	0	0	0	0	0

Variant 3: Epigastric pain with clinical suspicion for hiatal hernia. Initial imaging.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
Fluoroscopy biphasic esophagram	Usually appropriate	Limited	☢☢☢ 1-10 mSv		8	8	1	0	0	0	0	1	4	9	5

References	Study Quality
21 (29713739)	4
23 (29063954)	4
6 (23973101)	4
22 (19756887)	3
14 (16170017)	4
15 (6828761)	2
16 (6771981)	3

Fluoroscopy upper GI series	Usually appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢ 0.3-3 mSv [ped]	8	8	0	0	0	0	0	1	5	11	3

References	Study Quality
6 (23973101)	4
14 (16170017)	4
17 (18096527)	4

Fluoroscopy single contrast esophagram	Usually appropriate	Limited	☢☢☢ 1-10 mSv		7	7	0	0	0	0	0	2	13	4	1

References	Study Quality
14 (16170017)	4

CT abdomen without IV contrast	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	3	3	7	1	3	5	1	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	7	2	2	3	2	1	0	0	1

CT abdomen with IV contrast	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	2	2	8	2	2	2	2	0	2	0	0
CT abdomen without and with IV contrast	Usually not appropriate	Expert Consensus	☢☢☢☢ 10-30 mSv	☢☢☢☢☢ 10-30 mSv [ped]	2	2	9	5	2	0	0	1	0	1	0
CT abdomen and pelvis without IV contrast	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	2	2	7	5	1	4	0	0	0	0	1
CT abdomen and pelvis without and with IV contrast	Usually not appropriate	Expert Consensus	☢☢☢☢ 10-30 mSv	☢☢☢☢☢ 10-30 mSv [ped]	1	1	11	4	1	0	0	0	0	1	1
MRI abdomen without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	10	2	2	1	1	0	1	0	1
MRI abdomen without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	13	4	2	0	0	0	1	0	0
MRI abdomen without IV contrast with MRCP	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	11	2	2	1	0	0	0	0	2
MRI abdomen without and with IV contrast with MRCP	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	11	2	1	2	0	0	0	0	2
FDG-PET/CT skull base to mid-thigh	Usually not appropriate	Expert Consensus	☢☢☢☢ 10-30 mSv	☢☢☢☢ 3-10 mSv [ped]	1	1	14	1	1	0	0	0	0	0	2
CT abdomen with IV contrast multiphase	Usually not appropriate	Expert Consensus	☢☢☢☢ 10-30 mSv		1	1	11	2	3	0	0	0	1	0	1

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.**