



CT chest with IV contrast	Usually appropriate	Strong	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	7	7	1	0	0	0	1	3	1	0	4	
		References	Study Quality													
		7 (30175454)	4													
		20 (38071125)	2													
		17 (26215242)	4													
		16 (31648788)	4													
		18 (37278076)	3													
		19 (30676527)	2													
		14 (27163732)	2													
		12 (26708426)	3													
		21 (37417996)	2													
CT chest without IV contrast	May be appropriate (Disagreement)	Expert Opinion	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	5	5	2	0	0	1	3	2	4	0	0	
CT chest without and with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	3	3	2	2	6	0	0	0	1	0	0	
MRI chest without IV contrast	Usually not appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	1	1	6	0	1	2	0	0	1	0	0	
		References	Study Quality													
		23 (23962879)	4													
		22 (33424019)	2													
		24 (31054749)	4													
MRI chest without and with IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	7	1	1	0	1	0	0	0	0	
Bone scan ribs	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv		1	1	7	2	1	0	0	0	0	0	0	
V/Q scan lung	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	1	1	9	0	1	0	0	0	0	0	0	

US chest	Usually not appropriate	Strong	0 0 mSv	0 0 mSv [ped]	1	1	9	3	0	0	0	0	0	0	0
		References		Study Quality											
		50 (29580349)		3											
		49 (36754698)		3											
		45 (36658000)		3											
		48 (31061252)		4											
		46 (35435007)		2											
		47 (36456990)		2											
		44 (22828649)		1											
		43 (30066090)		4											
		37 (35461720)		Good											
		39 (32702777)		Good											
		40 (34932040)		3											
		38 (24060427)		Good											
		41 (37171252)		3											
		42 (38395059)		4											
		35 (26683569)		2											
		36 (31317856)		4											
		34 (33218837)		1											
		33 (35437526)		Not Assessed											
		51 (32814988)		3											
MRI chest with IV contrast	Usually not appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	1	1	6	2	1	0	1	0	0	0	0
Bone scan chest	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv		1	1	8	2	0	0	0	0	0	0	0

**Variant 2: Adult. Minor blunt trauma from assault with right upper flank pain with hematuria or assault or fall or low speed motor vehicle collision with right upper quadrant pain. 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]	9	9	0	0	1	0	0	1	0	1	7
		References		Study Quality											
		53 (26046510)		4											
		54 (26169091)		3											
CTU without and with IV contrast	Usually appropriate	Limited	⊕⊕⊕⊕ 10-30 mSv	⊕⊕⊕⊕⊕ 10-30 mSv [ped]	7	7	1	0	0	0	1	1	5	0	4
		References		Study Quality											
		73 (35278492)		4											
		72 (30605143)		1											
		69 (28451770)		4											
		68 (38092717)		4											
		67 (27085822)		4											
		60 (38009413)		4											
		74 (27133737)		3											
		62 (31729629)		4											
CT abdomen and pelvis without and with IV contrast	Usually not appropriate	Limited	⊕⊕⊕⊕ 10-30 mSv	⊕⊕⊕⊕⊕ 10-30 mSv [ped]	3	3	2	2	6	0	0	0	1	0	0
		References		Study Quality											
		56 (23147187)		4											
CTA abdomen with IV contrast	Usually not appropriate	Expert Consensus	⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	3	3	2	3	2	2	1	1	0	0	0
CTA abdomen and pelvis with IV contrast	Usually not appropriate	Limited	⊕⊕⊕⊕ 10-30 mSv	⊕⊕⊕⊕⊕ 10-30 mSv [ped]	3	3	2	2	4	2	2	0	0	0	0
		References		Study Quality											

66 (25124459)	4
65 (35122178)	4
64 (31489487)	4

CT pelvis with bladder contrast (CT cystography)	Usually not appropriate	Limited	☹☹☹☹ 10-30 mSv	☹☹☹☹ 3-10 mSv [ped]	3	3	3	2	4	0	0	1	0	0	0
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References	Study Quality
63 (28126218)	4
62 (31729629)	4
61 (25600513)	4
58 (25323027)	4
59 (28730297)	4
60 (38009413)	4
57 (30979861)	4

CT abdomen and pelvis without IV contrast	Usually not appropriate	Expert Consensus	☹☹☹ 1-10 mSv	☹☹☹☹ 3-10 mSv [ped]	2	2	5	4	1	1	1	0	0	0	0
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MRI abdomen without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	2	2	4	3	2	1	0	0	0	0	0
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MRI abdomen without and with IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	2	2	4	3	1	2	0	0	0	0	0
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US abdomen	Usually not appropriate	Strong	○ 0 mSv	○ 0 mSv [ped]	2	2	2	5	0	0	3	1	0	0	0
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References	Study Quality
78 (25578621)	4
77 (26368505)	4
76 (25498329)	3
37 (35461720)	Good
79 (19457583)	2

Radiography abdomen and pelvis	Usually not appropriate	Limited	☹☹☹ 1-10 mSv	☹☹☹ 0.3-3 mSv [ped]	2	2	4	6	1	0	1	0	0	0	0
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References	Study Quality
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		74 (27133737)	3												
DTPA renal scan	Usually not appropriate	Expert Consensus	☹☹☹ 1-10 mSv	☹☹☹ 0.3-3 mSv [ped]	1	1	8	1	1	0	0	0	0	0	0
Liver spleen scan	Usually not appropriate	Expert Consensus	☹☹☹ 1-10 mSv		1	1	7	1	1	0	1	0	0	0	0
DMSA renal scan	Usually not appropriate	Expert Consensus	☹☹☹ 1-10 mSv	☹☹☹ 0.3-3 mSv [ped]	1	1	8	1	1	0	0	0	0	0	0

**Variant 3: Adult. Minor blunt trauma as a result of fall from bicycle with handlebar injury. 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	0	0	1	0	1	3	4	2
			References	Study Quality											
			80 (24838812)	3											
			81 (28291454)	3											
			83 (35803743)	4											
			82 (27641159)	4											
			84 (25294636)	4											
			85 (37125949)	3											
CT abdomen and pelvis without IV contrast	Usually not appropriate	Expert Consensus	☹☹☹ 1-10 mSv	☹☹☹☹ 3-10 mSv [ped]	2	2	3	3	2	0	2	1	0	0	0
CT abdomen and pelvis without and with IV contrast	Usually not appropriate	Expert Consensus	☹☹☹☹ 10-30 mSv	☹☹☹☹☹ 10-30 mSv [ped]	2	2	2	5	4	0	0	0	0	0	0
CTA abdomen and pelvis with IV contrast	Usually not appropriate	Expert Consensus	☹☹☹☹ 10-30 mSv	☹☹☹☹☹ 10-30 mSv [ped]	2	2	2	5	4	1	0	0	0	0	0



90 (32080763)	4
91 (23522505)	4
88 (29521798)	3
89 (31706587)	3

CT enterography	Usually not appropriate	Expert Consensus	⊕⊕⊕⊕ 10-30 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	3	3	4	1	5	0	0	0	0	0	0
CT abdomen and pelvis without IV contrast	Usually not appropriate	Expert Consensus	⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	2	2	3	3	2	1	1	1	0	0	0
CT abdomen and pelvis without and with IV contrast	Usually not appropriate	Limited	⊕⊕⊕⊕ 10-30 mSv	⊕⊕⊕⊕⊕ 10-30 mSv [ped]	2	2	2	4	5	0	0	0	0	0	0

References	Study Quality
56 (23147187)	4

Radiography abdomen	Usually not appropriate	Expert Consensus	⊕⊕ 0.1-1mSv	⊕⊕ 0.03-0.3 mSv [ped]	2	2	4	3	1	1	1	0	1	0	0
MRI abdomen and pelvis without IV contrast	Usually not appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	1	1	6	2	2	0	0	0	0	0	0

References	Study Quality
86 (24379625)	4
83 (35803743)	4

MRI abdomen and pelvis without and with IV contrast	Usually not appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	1	1	6	1	2	0	1	0	0	0	0
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References	Study Quality
86 (24379625)	4
83 (35803743)	4

US abdomen	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	8	1	0	2	0	1	0	0	0
MRI abdomen and pelvis with IV contrast	Usually not appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	1	1	6	1	3	0	0	0	0	0	0

References	Study Quality
86 (24379625)	4
83 (35803743)	4

**Variant 5: Adult. Minor blunt trauma from motor vehicle collision with gross hematuria. Initial imaging.**

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations									
							1	2	3	4	5	6	7	8	9	
CT pelvis with bladder contrast (CT cystography)	Usually appropriate	Limited	⊕⊕⊕⊕ 10-30 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	9	9	0	0	0	1	0	0	2	1	6	
		References	Study Quality													
		63 (28126218)	4													
		94 (28836750)	4													
		61 (25600513)	4													
		93 (30489505)	4													
		62 (31729629)	4													
		60 (38009413)	4													
		58 (25323027)	4													
		59 (28730297)	4													
		57 (30979861)	4													
CT abdomen and pelvis with IV contrast	Usually appropriate	Limited	⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	8	8	0	0	0	0	1	0	2	3	4	
		References	Study Quality													
		61 (25600513)	4													
		54 (26169091)	3													
		71 (23354250)	2													
		64 (31489487)	4													
		92 (-3199126)	4													
Fluoroscopy cystography	May be appropriate	Limited	⊕⊕⊕ 1-10 mSv		5	5	1	0	2	0	5	2	0	1	0	

References	Study Quality
61 (25600513)	4
60 (38009413)	4
58 (25323027)	4
57 (30979861)	4
62 (31729629)	4
92 (-3199126)	4
64 (31489487)	4

CT abdomen and pelvis without and with IV contrast	Usually not appropriate	Limited	⊕⊕⊕⊕ 10-30 mSv	⊕⊕⊕⊕⊕ 10-30 mSv [ped]	3	3	2	3	4	1	1	0	0	0	0
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References	Study Quality
56 (23147187)	4

CT abdomen and pelvis without IV contrast	Usually not appropriate	Expert Consensus	⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕⊕ 3-10 mSv [ped]	2	2	4	4	3	0	1	0	0	0	0
MRI abdomen without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	2	2	5	3	1	1	0	0	0	0	0
MRI abdomen without and with IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	2	2	5	3	1	1	0	0	0	0	0
MRI abdomen and pelvis without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	2	2	5	3	1	1	0	0	0	0	0
MRI abdomen and pelvis without and with IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	2	2	5	2	1	1	1	0	0	0	0
US abdomen	Usually not appropriate	Moderate	○ 0 mSv	○ 0 mSv [ped]	2	2	6	4	1	0	0	0	1	0	0

References	Study Quality
76 (25498329)	3
96 (33484276)	4
77 (26368505)	4
78 (25578621)	4

			37 (35461720)		Good										
Nuclear medicine cystography	Usually not appropriate	Expert Consensus	☼☼ 0.1-1mSv	☼☼ 0.03-0.3 mSv [ped]	1	1	6	1	1	0	2	0	0	0	0
DTPA renal scan	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	1	1	7	1	0	2	0	0	0	0	0
Radiography abdomen and pelvis	Usually not appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	1	1	7	4	1	0	0	0	0	0	0
			References		Study Quality										
			75 (29267560)		4										
DMSA renal scan	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	1	1	8	1	0	1	0	0	0	0	0

**Variant 6: Adult. Minor blunt trauma from sports injury with left upper quadrant pain. 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	0	0	1	0	0	2	3	5
			References		Study Quality										
			59 (28730297)		4										
			97 (31900381)		4										
			17 (26215242)		4										
			98 (27519599)		4										
CT abdomen and pelvis without and with IV contrast	Usually not appropriate	Limited	☼☼☼☼ 10-30 mSv	☼☼☼☼☼ 10-30 mSv [ped]	3	3	1	4	4	1	1	0	0	0	0
			References		Study Quality										
			56 (23147187)		4										

CT abdomen and pelvis without IV contrast	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	2	2	2	4	2	0	3	0	0	0	0
Fluoroscopy small bowel follow-through	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	7	2	1	0	0	0	0	0	0
Fluoroscopy upper GI series with small bowel follow-through	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	6	2	1	1	0	0	0	0	0
MRI abdomen and pelvis without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	6	2	1	0	1	0	0	0	0
MRI abdomen and pelvis without and with IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	6	2	2	0	0	0	0	0	0
MR enterography	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	6	3	1	0	0	0	0	0	0
US abdomen	Usually not appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	1	1	7	3	0	1	0	0	1	0	0

References	Study Quality
17 (26215242)	4
99 (35286054)	4

Radiography abdomen and pelvis	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼ 0.3-3 mSv [ped]	1	1	7	3	2	0	0	0	0	0	0
MRI abdomen and pelvis with IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	6	1	1	0	2	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](http://www.acr.org/ac).