

**American College of Radiology
ACR Appropriateness Criteria®**

Suspected Appendicitis-Child

Variant 1: Child. Suspected acute appendicitis, low clinical risk. Initial imaging.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
US abdomen RLQ	Usually not appropriate	Moderate	○ 0 mSv	○ 0 mSv [ped]	3	3	0	8	7	3	0	0	0	0	0
		References		Study Quality											
		48 (27215717)		2											
		50 (27029683)		3											
		49 (26797233)		4											
		13 (24379237)		3											
		16 (24076607)		2											
		17 (21242447)		3											
CT abdomen and pelvis with IV contrast	Usually not appropriate	Moderate	☹☹☹ 1-10 mSv	☹☹☹☹ 3-10 mSv [ped]	2	2	6	6	1	1	4	0	0	0	0
		References		Study Quality											
		55 (24682520)		3											
		50 (27029683)		3											
		54 (24595877)		3											
		39 (18074913)		3											
		53 (17543650)		3											
		38 (15837022)		2											
MRI abdomen and pelvis without IV contrast	Usually not appropriate	Moderate	○ 0 mSv	○ 0 mSv [ped]	2	2	6	6	3	3	0	0	0	0	0

References	Study Quality
55 (24682520)	3
48 (27215717)	2
50 (27029683)	3
49 (26797233)	4
13 (24379237)	3
16 (24076607)	2
17 (21242447)	3

MRI abdomen and pelvis without and with IV contrast	Usually not appropriate	Moderate	0 0 mSv	0 0 mSv [ped]	2	2	7	6	2	3	0	0	0	0	0
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References	Study Quality
55 (24682520)	3
48 (27215717)	2
50 (27029683)	3
49 (26797233)	4
13 (24379237)	3
16 (24076607)	2
17 (21242447)	3

US abdomen	Usually not appropriate	Moderate	0 0 mSv	0 0 mSv [ped]	2	2	1	10	5	2	0	0	0	0	0
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References	Study Quality
48 (27215717)	2
50 (27029683)	3
49 (26797233)	4
13 (24379237)	3
16 (24076607)	2
17 (21242447)	3

US pelvis	Usually not appropriate	Moderate	0 0 mSv	0 0 mSv [ped]	2	2	1	13	2	1	1	0	0	0	0
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References	Study Quality
48 (27215717)	2

50 (27029683)	3
49 (26797233)	4
13 (24379237)	3
16 (24076607)	2
17 (21242447)	3
52 (18082786)	3

Radiography abdomen	Usually not appropriate	Moderate	☼☼ 0.1-1mSv	☼☼☼ 0.03-0.3 mSv [ped]	2	2	4	10	2	1	1	0	0	0	0
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References	Study Quality
48 (27215717)	2
50 (27029683)	3
49 (26797233)	4
13 (24379237)	3
16 (24076607)	2
17 (21242447)	3
51 (16456751)	3

CT abdomen and pelvis without IV contrast	Usually not appropriate	Strong	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	12	4	0	1	1	0	0	0	0
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References	Study Quality
55 (24682520)	3
50 (27029683)	3
54 (24595877)	3
39 (18074913)	3
53 (17543650)	3
38 (15837022)	2

CT abdomen and pelvis without and with IV contrast	Usually not appropriate	Moderate	☼☼☼☼ 10-30 mSv	☼☼☼☼☼ 10-30 mSv [ped]	1	1	12	5	0	1	0	0	0	0	0
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References	Study Quality
55 (24682520)	3

50 (27029683)	3
54 (24595877)	3
39 (18074913)	3
53 (17543650)	3
38 (15837022)	2

Variant 2: Child. Suspected acute appendicitis, intermediate clinical risk. Initial imaging.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
US abdomen RLQ	Usually appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	9	9	0	0	0	0	0	0	1	6	11
		References	Study Quality												
		13 (24379237)	3												
US abdomen	Usually appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	7	7	1	0	0	0	0	1	10	5	1
CT abdomen and pelvis with IV contrast	May be appropriate (Disagreement)	Expert Opinion	⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	5	5	1	0	1	1	2	7	2	3	1
		References	Study Quality												
		55 (24682520)	3												
		54 (24595877)	3												
		39 (18074913)	3												
		53 (17543650)	3												
		38 (15837022)	2												
CT abdomen and pelvis without IV contrast	May be appropriate (Disagreement)	Expert Opinion	⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	5	5	0	4	3	1	3	2	4	1	0
		References	Study Quality												
		55 (24682520)	3												
		54 (24595877)	3												
		39 (18074913)	3												

US pelvis	Usually not appropriate	38 (15837022)			2		3	8	3	0	2	1	1	0	0
		Limited	O 0 mSv	O 0 mSv [ped]	2	2									
		References	Study Quality												
		52 (18082786)			3										

Variant 3: Child. Suspected acute appendicitis, high clinical risk. 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	May be appropriate	Moderate	⊗⊗⊗ 1-10 mSv	⊗⊗⊗⊗ 3-10 mSv [ped]	6	6	1	0	1	0	3	11	0	2	0
		References	Study Quality												
		14 (25488354)			2										
		39 (18074913)			3										
		38 (15837022)			2										
MRI abdomen and pelvis without IV contrast	May be appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	6	6	0	1	0	4	4	7	1	1	0
US abdomen RLQ	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	6	6	0	1	1	0	3	7	5	0	1
		References	Study Quality												
		58 (25708690)			4										
CT abdomen and pelvis without IV contrast	May be appropriate (Disagreement)	Expert Opinion	⊗⊗⊗ 1-10 mSv	⊗⊗⊗⊗ 3-10 mSv [ped]	5	5	0	5	1	2	4	6	0	0	0
		References	Study Quality												
		14 (25488354)			2										
		39 (18074913)			3										
		38 (15837022)			2										

MRI abdomen and pelvis without and with IV contrast	May be appropriate (Disagreement)	Expert Opinion	○ 0 mSv	○ 0 mSv [ped]	5	5	1	2	2	4	5	3	0	1	0
US abdomen	May be appropriate (Disagreement)	Expert Opinion	○ 0 mSv	○ 0 mSv [ped]	5	5	0	2	1	0	3	8	3	1	0
		References		Study Quality											
		58 (25708690)		4											
CT abdomen and pelvis without and with IV contrast	Usually not appropriate	Moderate	⊗⊗⊗⊗ 10-30 mSv	⊗⊗⊗⊗⊗ 10-30 mSv [ped]	2	2	8	4	4	0	1	1	0	0	0
		References		Study Quality											
		14 (25488354)		2											
		39 (18074913)		3											
		38 (15837022)		2											
US pelvis	Usually not appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	2	2	1	12	2	0	2	1	0	0	0
		References		Study Quality											
		52 (18082786)		3											
Radiography abdomen	Usually not appropriate	Limited	⊗⊗ 0.1-1mSv	⊗⊗ 0.03-0.3 mSv [ped]	1	1	11	3	3	1	0	0	0	0	0
		References		Study Quality											
		51 (16456751)		3											

Variant 4: Child. Suspected acute appendicitis, equivocal or nondiagnostic right lower quadrant ultrasound. Next imaging study.

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	Strong	⊗⊗⊗ 1-10 mSv	⊗⊗⊗⊗ 3-10 mSv [ped]	8	8	0	0	0	0	0	1	4	6	7
		References		Study Quality											

37 (26518583)	2
68 (25903701)	2
65 (24917390)	3
69 (23217887)	3
18 (22849662)	3
70 (21324843)	3
61 (20053244)	2
39 (18074913)	3
38 (15837022)	2

MRI abdomen and pelvis without IV contrast	Usually appropriate	Strong	0 0 mSv	0 0 mSv [ped]	7	7	0	1	1	0	0	4	6	5	1
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References	Study Quality
41 (26901006)	Good
48 (27215717)	2
40 (26458209)	3
72 (24590746)	3
71 (23617477)	2

MRI abdomen and pelvis without and with IV contrast	Usually appropriate	Strong	0 0 mSv	0 0 mSv [ped]	7	7	0	0	0	1	0	4	8	4	1
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References	Study Quality
41 (26901006)	Good
48 (27215717)	2
40 (26458209)	3
72 (24590746)	3
71 (23617477)	2

CT abdomen and pelvis without IV contrast	May be appropriate (Disagreement)	Expert Opinion	☹☹☹ 1-10 mSv	☹☹☹☹ 3-10 mSv [ped]	5	5	0	2	2	3	1	1	3	6	0
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References	Study Quality
37 (26518583)	2
68 (25903701)	2
65 (24917390)	3

			69 (23217887)		3														
			18 (22849662)		3														
			70 (21324843)		3														
			61 (20053244)		2														
			39 (18074913)		3														
			38 (15837022)		2														
US abdomen	May be appropriate (Disagreement)	Expert Opinion	O 0 mSv	O 0 mSv [ped]	5	5	1	2	1	5	6	3	0	0	0				
US abdomen RLQ	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	5	5	0	1	2	5	4	5	1	0	0				
		References	Study Quality																
		67 (25808065)	2																
CT abdomen and pelvis without and with IV contrast	Usually not appropriate	Limited	⊕⊕⊕⊕ 10-30 mSv	⊕⊕⊕⊕⊕ 10-30 mSv [ped]	3	3	3	6	7	0	0	1	0	0	1				
		References	Study Quality																
		39 (18074913)	3																
		38 (15837022)	2																
US pelvis	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	2	2	5	8	3	0	2	0	0	0	0				
		References	Study Quality																
		52 (18082786)	3																
Radiography abdomen	Usually not appropriate	Limited	⊕⊕ 0.1-1mSv	⊕⊕ 0.03-0.3 mSv [ped]	2	2	5	8	1	2	1	0	0	1	0				
		References	Study Quality																
		51 (16456751)	3																

Variant 5: Child. Suspected acute appendicitis with clinical suspicion or initial imaging suggestive of complication (eg, abscess, bowel obstruction). Next imaging study.

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	0	11	6	
		References	Study Quality													
		39 (18074913)	3													
		38 (15837022)	2													
CT abdomen and pelvis without IV contrast	May be appropriate (Disagreement)	Expert Opinion	⊗⊗⊗ 1-10 mSv	⊗⊗⊗⊗ 3-10 mSv [ped]	5	5	1	2	8	2	2	0	0	3	0	
		References	Study Quality													
		39 (18074913)	3													
		38 (15837022)	2													
MRI abdomen and pelvis without IV contrast	May be appropriate (Disagreement)	Expert Opinion	○ 0 mSv	○ 0 mSv [ped]	5	5	2	2	2	1	5	4	1	1	0	
		References	Study Quality													
		40 (26458209)	3													
MRI abdomen and pelvis without and with IV contrast	May be appropriate (Disagreement)	Expert Opinion	○ 0 mSv	○ 0 mSv [ped]	5	5	0	4	2	2	3	4	2	1	0	
		References	Study Quality													
		40 (26458209)	3													
CT abdomen and pelvis without and with IV contrast	Usually not appropriate	Limited	⊗⊗⊗⊗ 10-30 mSv	⊗⊗⊗⊗⊗ 10-30 mSv [ped]	3	3	3	6	7	0	0	0	1	0	1	
		References	Study Quality													
		39 (18074913)	3													
		38 (15837022)	2													
US abdomen	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	3	3	5	1	5	3	3	1	0	0	0	

US abdomen RLQ	Usually not appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	3	3	4	2	5	4	2	0	1	0	0
		References		Study Quality											
		2 (26810020)		3											
Radiography abdomen	Usually not appropriate	Limited	☼☼ 0.1-1mSv	☼☼ 0.03-0.3 mSv [ped]	3	3	5	3	3	2	3	2	0	0	0
		References		Study Quality											
		51 (16456751)		3											
US pelvis	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	2	2	6	5	4	2	0	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.