

American College of Radiology ACR Appropriateness Criteria®

Sepsis

Variant 1: Suspected or confirmed sepsis. Cough or dyspnea or chest pain. Initial imaging.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
Radiography chest	Usually appropriate	Limited	⊕ <0.1 mSv	⊕ <0.03 mSv [ped]	9	9	0	0	0	1	0	0	1	4	15
		References	Study Quality												
		8 (21215552)	2												
CT chest with IV contrast	May be appropriate	Limited	⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	6	6	0	0	0	0	5	8	5	5	0
		References	Study Quality												
		6 (32971451)	2												
		7 (25468363)	4												
CT chest without IV contrast	May be appropriate	Limited	⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	6	6	0	1	0	1	8	10	1	1	1
		References	Study Quality												
		6 (32971451)	2												
		7 (25468363)	4												
CT chest without and with IV contrast	Usually not appropriate	Expert Consensus	⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	1	1	12	3	3	0	1	0	1	1	0
MRI chest without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	16	1	1	2	0	1	0	0	0

MRI chest without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	16	1	1	1	1	0	1	0	0
FDG-PET/CT skull base to mid-thigh	Usually not appropriate	Expert Consensus	⊗⊗⊗⊗ 10-30 mSv	⊗⊗⊗⊗ 3-10 mSv [ped]	1	1	19	2	0	0	0	0	0	0	0

Variant 2: Suspected or confirmed sepsis. Cough or dyspnea or chest pain. Normal or equivocal or nonspecific chest radiograph. 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 chest with IV contrast	Usually appropriate	Limited	⊗⊗⊗ 1-10 mSv	⊗⊗⊗⊗ 3-10 mSv [ped]	8	8	0	0	0	0	2	0	4	6	9
		References	Study Quality												
		6 (32971451)	2												
		7 (25468363)	4												
CT chest without IV contrast	Usually appropriate	Limited	⊗⊗⊗ 1-10 mSv	⊗⊗⊗⊗ 3-10 mSv [ped]	8	8	0	0	1	0	2	3	1	9	5
		References	Study Quality												
		6 (32971451)	2												
		7 (25468363)	4												
FDG-PET/CT skull base to mid-thigh	Usually not appropriate	Strong	⊗⊗⊗⊗ 10-30 mSv	⊗⊗⊗⊗ 3-10 mSv [ped]	2	2	8	4	0	2	5	1	1	0	0
		References	Study Quality												
		12 (33827655)	2												
		11 (30788532)	2												
		10 (22176803)	2												
		9 (23776621)	2												
CT chest without and with IV contrast	Usually not appropriate	Expert Consensus	⊗⊗⊗ 1-10 mSv	⊗⊗⊗⊗ 3-10 mSv [ped]	1	1	12	2	3	0	2	0	0	1	1

CT abdomen and pelvis without and with IV contrast	Usually not appropriate	Expert Consensus	☼☼☼☼ 10-30 mSv	☼☼☼☼☼ 10-30 mSv [ped]	2	2	11	10	2	0	0	0	0	0	0
MRI abdomen and pelvis without and with IV contrast	Usually not appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	2	2	6	6	3	2	1	2	0	0	0
		References	Study Quality												
		14 (32072724)	4												
Radiography abdomen	Usually not appropriate	Limited	☼☼ 0.1-1mSv	☼☼ 0.03-0.3 mSv [ped]	2	2	4	11	4	4	0	0	0	0	0
		References	Study Quality												
		15 (26754121)	4												
		16 (11307365)	4												
Fluoroscopy contrast enema	Usually not appropriate	Expert Consensus	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	16	2	2	0	1	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	16	2	1	1	1	0	0	0	0
MRI abdomen and pelvis without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	1	1	12	6	0	2	1	0	0	0	0
Nuclear medicine scan gallbladder	Usually not appropriate	Expert Consensus	☼☼ 0.1-1mSv		1	1	14	4	1	0	1	1	0	0	0
FDG-PET/CT skull base to mid-thigh	Usually not appropriate	Expert Consensus	☼☼☼☼ 10-30 mSv	☼☼☼☼ 3-10 mSv [ped]	1	1	17	3	1	0	0	0	0	0	0
WBC scan abdomen and pelvis	Usually not appropriate	Expert Consensus	☼☼☼☼ 10-30 mSv		1	1	13	5	0	2	1	0	0	0	0

Variant 4: Suspected or confirmed sepsis. No specific symptoms suggestive of origin, or symptoms cannot be assessed. Initial imaging.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
Radiography chest	Usually appropriate	Limited	⊕ <0.1 mSv	⊕ <0.03 mSv [ped]	7	7	0	1	0	1	0	0	13	4	4
		References		Study Quality											
		8 (21215552)		2											
CT abdomen and pelvis with IV contrast	May be appropriate	Limited	⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	6	6	0	1	0	2	7	5	3	5	0
		References		Study Quality											
		6 (32971451)		2											
		7 (25468363)		4											
CT chest with IV contrast	May be appropriate	Limited	⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	6	6	0	1	0	1	7	7	5	2	0
		References		Study Quality											
		6 (32971451)		2											
		7 (25468363)		4											
CT chest without IV contrast	May be appropriate	Limited	⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	6	6	0	0	1	5	2	4	7	2	0
		References		Study Quality											
		6 (32971451)		2											
		7 (25468363)		4											
CT chest abdomen pelvis with IV contrast	May be appropriate	Limited	⊕⊕⊕⊕ 10-30 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	6	6	0	1	0	0	5	9	0	7	1
		References		Study Quality											
		6 (32971451)		2											
		7 (25468363)		4											
US abdomen	May be appropriate	Limited	○ ○ 0 mSv	○ ○ 0 mSv [ped]	6	6	0	2	0	0	8	11	2	0	0
		References		Study Quality											

		18 (23422051)		4											
		17 (26441019)		4											
		16 (11307365)		4											
		15 (26754121)		4											
		13 (6600545)		4											
CT chest abdomen pelvis without IV contrast	May be appropriate (Disagreement)	Expert Opinion	⚡⚡⚡⚡ 10-30 mSv	⚡⚡⚡⚡⚡ 3-10 mSv [ped]	5	5	4	6	7	0	2	3	1	0	0
		References		Study Quality											
		6 (32971451)		2											
		7 (25468363)		4											
CT abdomen and pelvis without IV contrast	Usually not appropriate	Limited	⚡⚡⚡ 1-10 mSv	⚡⚡⚡⚡⚡ 3-10 mSv [ped]	3	3	2	7	5	1	6	1	1	0	0
		References		Study Quality											
		6 (32971451)		2											
		7 (25468363)		4											
CT abdomen and pelvis without and with IV contrast	Usually not appropriate	Expert Consensus	⚡⚡⚡⚡ 10-30 mSv	⚡⚡⚡⚡⚡ 10-30 mSv [ped]	2	2	7	5	4	3	0	0	1	0	1
CT chest abdomen pelvis without and with IV contrast	Usually not appropriate	Expert Consensus	⚡⚡⚡⚡ 10-30 mSv	⚡⚡⚡⚡⚡ 10-30 mSv [ped]	2	2	10	10	3	0	0	0	0	0	0
MRI abdomen and pelvis without IV contrast	Usually not appropriate	Expert Consensus	0 0 mSv	0 0 mSv [ped]	2	2	9	6	2	3	0	0	1	0	0
MRI abdomen and pelvis without and with IV contrast	Usually not appropriate	Limited	0 0 mSv	0 0 mSv [ped]	2	2	9	4	3	2	1	1	0	1	0
		References		Study Quality											
		14 (32072724)		4											
Radiography abdomen	Usually not appropriate	Limited	⚡⚡ 0.1-1mSv	⚡⚡ 0.03-0.3 mSv [ped]	2	2	7	7	4	5	0	0	0	0	0

		6 (32971451)		2													
		7 (25468363)		4													
		13 (6600545)		4													
CT chest with IV contrast	May be appropriate	Limited	☹☹☹ 1-10 mSv	☹☹☹☹ 3-10 mSv [ped]	6	6	1	1	0	0	5	8	7	1	0		
		References		Study Quality													
		6 (32971451)		2													
		7 (25468363)		4													
CT chest without IV contrast	May be appropriate	Limited	☹☹☹ 1-10 mSv	☹☹☹☹ 3-10 mSv [ped]	6	6	1	0	1	1	3	5	8	1	1		
		References		Study Quality													
		6 (32971451)		2													
		7 (25468363)		4													
CT abdomen and pelvis without IV contrast	May be appropriate (Disagreement)	Expert Opinion	☹☹☹ 1-10 mSv	☹☹☹☹ 3-10 mSv [ped]	5	5	4	6	5	0	3	5	0	0	0		
		References		Study Quality													
		6 (32971451)		2													
		7 (25468363)		4													
CT chest abdomen pelvis with IV contrast	May be appropriate (Disagreement)	Expert Opinion	☹☹☹☹ 10-30 mSv	☹☹☹☹ 3-10 mSv [ped]	5	5	1	2	0	0	3	9	2	5	1		
		References		Study Quality													
		6 (32971451)		2													
		7 (25468363)		4													
CT chest abdomen pelvis without IV contrast	May be appropriate (Disagreement)	Expert Opinion	☹☹☹☹ 10-30 mSv	☹☹☹☹ 3-10 mSv [ped]	5	5	3	7	6	1	1	5	0	0	0		
		References		Study Quality													
		6 (32971451)		2													
		7 (25468363)		4													

US abdomen	May be appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	5	5	1	2	0	3	9	6	2	0	0
		References		Study Quality											
		18 (23422051)		4											
		17 (26441019)		4											
		16 (11307365)		4											
		15 (26754121)		4											
		13 (6600545)		4											
MRI abdomen and pelvis without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	2	2	5	7	6	2	0	0	0	1	0
MRI abdomen and pelvis without and with IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	2	2	4	7	6	1	1	1	1	0	0
MRI chest without IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	2	2	10	7	1	2	0	0	1	0	0
MRI chest without and with IV contrast	Usually not appropriate	Expert Consensus	○ 0 mSv	○ 0 mSv [ped]	2	2	10	7	1	1	0	1	0	1	0
FDG-PET/CT skull base to mid-thigh	Usually not appropriate	Strong	⊕⊕⊕⊕ 10-30 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	2	2	7	5	6	4	0	0	1	0	0
		References		Study Quality											
		12 (33827655)		2											
		11 (30788532)		2											
		10 (22176803)		2											
		9 (23776621)		2											
Radiography abdomen	Usually not appropriate	Limited	⊕⊕ 0.1-1mSv	⊕⊕ 0.03-0.3 mSv [ped]	2	2	8	8	6	1	0	0	0	0	0
		References		Study Quality											
		15 (26754121)		4											
		16 (11307365)		4											
WBC scan abdomen and pelvis	Usually not appropriate	Limited	⊕⊕⊕⊕ 10-30 mSv		2	2	7	7	4	4	1	0	0	0	0

References	Study Quality
22 (16404232)	2
21 (2112472)	4
20 (8583440)	4
19 (-3196415)	4

CT abdomen and pelvis without and with IV contrast	Usually not appropriate	Expert Consensus	⚡⚡⚡⚡ 10-30 mSv	⚡⚡⚡⚡⚡ 10-30 mSv [ped]	1	1	13	9	1	0	0	0	0	0	0
CT chest without and with IV contrast	Usually not appropriate	Expert Consensus	⚡⚡⚡ 1-10 mSv	⚡⚡⚡⚡ 3-10 mSv [ped]	1	1	11	3	3	1	1	0	0	0	2
CT chest abdomen pelvis without and with IV contrast	Usually not appropriate	Expert Consensus	⚡⚡⚡⚡ 10-30 mSv	⚡⚡⚡⚡⚡ 10-30 mSv [ped]	1	1	12	11	0	0	0	0	0	0	0
Fluoroscopy contrast enema	Usually not appropriate	Expert Consensus	⚡⚡⚡ 1-10 mSv	⚡⚡⚡⚡ 3-10 mSv [ped]	1	1	17	2	2	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	17	2	1	1	0	0	0	0	0
Nuclear medicine scan gallbladder	Usually not appropriate	Expert Consensus	⚡⚡ 0.1-1mSv		1	1	14	3	1	1	0	2	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.