

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

# Rib Fractures

**Variant 1: Suspected rib fractures from minor blunt trauma (injury confined to ribs). 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	Strong	⊕ <0.1 mSv	⊕ <0.03 mSv [ped]	8	8	0	0	0	0	0	0	0	0	0
		References	Study Quality												
		2 (12013289)	4												
		9 (20171819)	2												
		1 (15100544)	2												
Radiography rib views	May be appropriate	Strong	⊕⊕⊕ 1-10 mSv		5	5	0	0	0	0	0	0	0	0	0
		References	Study Quality												
		12 (25690384)	1												
		11 (24648235)	3												
		10 (24297110)	2												
CT chest without IV contrast	Usually not appropriate	Strong	⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	3	3	0	0	0	0	0	0	0	0	0
		References	Study Quality												
		16 (26683395)	2												
		13 (23796979)	3												
		19 (16261391)	4												
		22 (9314299)	3												
		14 (27389132)	2												

17 (9148976)	4
18 (9282178)	3
15 (18404055)	4
20 (9095103)	3
21 (3562831)	2
23 (8147647)	4
24 (20549285)	4
25 (2672391)	4

Bone scan whole body	Usually not appropriate	Limited	☼☼☼ 1-10 mSv	☼☼☼☼ 3-10 mSv [ped]	2	2	0	0	0	0	0	0	0	0	0
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References	Study Quality
30 (7261514)	4
32 (12592121)	4
31 (536788)	4

CT chest with IV contrast	Usually not appropriate	Strong	☼☼☼ 1-10 mSv	☼☼☼☼☼ 3-10 mSv [ped]	1	1	0	0	0	0	0	0	0	0	0
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References	Study Quality
13 (23796979)	3
19 (16261391)	4
22 (9314299)	3
18 (9282178)	3
2 (12013289)	4
15 (18404055)	4
4 (12853057)	4
20 (9095103)	3
21 (3562831)	2
23 (8147647)	4
24 (20549285)	4
25 (2672391)	4



		References	Study Quality													
		34 (15036733)	4													
		33 (21705131)	2													
		35 (24525116)	Good													
Radiography rib views	May be appropriate	Expert Consensus	⊕⊕⊕ 1-10 mSv		5	5	0	0	0	0	0	0	0	0	0	0
CT chest without IV contrast	May be appropriate	Limited	⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	4	4	1	2	2	5	3	0	0	0	0	0
		References	Study Quality													
		33 (21705131)	2													
CT chest with IV contrast	Usually not appropriate	Limited	⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	2	2	0	0	0	0	0	0	0	0	0	0
		References	Study Quality													
		33 (21705131)	2													
Bone scan whole body	Usually not appropriate	Expert Consensus	⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	2	2	0	0	0	0	0	0	0	0	0	0
US chest	Usually not appropriate	Limited	○ 0 mSv	○ 0 mSv [ped]	2	2	0	0	0	0	0	0	0	0	0	0
		References	Study Quality													
		28 (10584808)	3													
CT chest without and with IV contrast	Usually not appropriate	Limited	⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	1	1	0	0	0	0	0	0	0	0	0	0
		References	Study Quality													
		33 (21705131)	2													

**Variant 3: Suspected pathologic rib fracture. Initial imaging.**

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9

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]	8	8	0	0	0	0	0	0	0	0	0
		References		Study Quality											
		38 (27498118)		4											
		37 (10492357)		2											
		36 (23017193)		3											
CT chest without IV contrast	Usually appropriate	Limited	⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	7	7	0	0	0	0	0	0	0	0	0
		References		Study Quality											
		36 (23017193)		3											
Bone scan whole body	Usually appropriate	Limited	⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	7	7	0	0	0	0	0	0	0	0	0
		References		Study Quality											
		30 (7261514)		4											
FDG-PET/CT skull base to mid-thigh	May be appropriate	Limited	⊕⊕⊕⊕ 10-30 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	5	5	0	0	0	0	0	0	0	0	0
		References		Study Quality											
		37 (10492357)		2											
		36 (23017193)		3											
Radiography rib views	May be appropriate	Expert Consensus	⊕⊕⊕ 1-10 mSv		5	5	0	0	0	0	0	0	0	0	0
CT chest with IV contrast	Usually not appropriate	Limited	⊕⊕⊕ 1-10 mSv	⊕⊕⊕⊕ 3-10 mSv [ped]	2	2	0	0	0	0	0	0	0	0	0
		References		Study Quality											
		36 (23017193)		3											

CT chest without and with IV contrast	Usually not appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢☢ 3-10 mSv [ped]	1	1	0	0	0	0	0	0	0	0
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	References	Study Quality	
	36 (23017193)	3	

US chest	Usually not appropriate	Limited	0.0 mSv	0.0 mSv [ped]	1	1	0	0	0	0	0	0	0	0	0
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References	Study Quality
38 (27498118)	4
37 (10492357)	2
36 (23017193)	3

## **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).