American College of Radiology ACR Appropriateness Criteria[®]

Rib Fractures

Variant 1: Suspected rib fractures from minor blunt trauma (injury confined to ribs). Initial imaging.

	Appropri	ateness			D 1 DD1				F	inal '	Tabu	latio	ns			
Procedure	Categ	ory	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
Radiography chest	Usua approp	lly riate	Strong	& <0.1 mSv	Image: Second state Image: Second state Image: Second state [ped]	8	8	0	0	0	0	0	0	0	0	0
			References		Study											
			2 (12013289)			4										
			9 (20171819) 2													
			1 (15100544) 2													
Radiography rib views	May approp		Strong	ହେତ 1-10 mSv		5	5	0	0	0	0	0	0	0	0	0
			References		Study	V Quality										
			12 (25690384)													
			11 (24648235)		3											
			10 (24297110)			2		_	_				-			
CT chest without IV contrast	Usually approp	y not riate	Strong	֎֎֎ 1-10 mSv	ଡେଡେଡେ 3- 10 mSv [ped]	3	3	0	0	0	0	0	0	0	0	0
			References		Study	Quality										
			16 (26683395)			2										
			13 (23796979)		3 4											
			19 (16261391)													
			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)		1	4			_							
Bone scan whole body	Usually no appropriat	iot ite	Limited	֎֎֎ 1-10 mSv	֎֎֎֎ 3- 10 mSv [ped]	2	2	0	0	0	0	0	0	0	0	0
			References		Study	/ Quality										
			30 (7261514)			4										
			32 (12592121)			4										
			31 (536788)			4										
CT chest with IV contrast	Usually no appropriat	iot ite	Strong	֎֎֎ 1-10 mSv	ତତତତ 3- 10 mSv [ped]	1	1	0	0	0	0	0	0	0	0	0
			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)													

CT chest without and with IV contrast	Usuall ₂ approp	y not priate	Strong	֎֎֎ 1-10 mSv	≎≎≎≎ 3- 10 mSv [ped]	1	1	0	0	0	0	0	0	0	0	0
			References		Study	V Quality										
			16 (26683395)													
			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)													
			24 (20549285)			4										
			25 (2672391)			4							-			
US chest	Usually approp	y not oriate	Limited	O 0 mSv	O 0 mSv [ped]	1	1	0	0	0	0	0	0	0	0	0
			References		Study	Quality										
			26 (14500082)	4												
			28 (10584808)	3												
			27 (11159088)			4										
			29 (15135274)			3										

Variant 2: Suspected rib fractures after cardiopulmonary resuscitation (CPR). Initial imaging.

	Appropriateness				D. (1	10.11			F	'inal '	Tabu	latio	ns		
Procedure	Category	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
Radiography chest	Usually appropriate	Strong	發 < 0.1 mSv	Image: wide of the second	8	8	0	0	0	0	0	0	0	0	0

		References		Study	V 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
CT chest without IV contrast	May be appropriate	Limited	ତେତତ 1-10 mSv	€€€€ 3- 10 mSv [ped]	4	4	1	2	2	5	3	0	0	0	0
		References			/ Quality			•							
		33 (21705131)		*	2										
CT chest with IV contrast	Usually not appropriate	Limited	ତେତତ 1-10 mSv	€€€€ 3- 10 mSv [ped]	2	2	0	0	0	0	0	0	0	0	0
		References		Study Quality											
		33 (21705131)	2												
Bone scan whole body	Usually not appropriate	Expert Consensus	ତତତ 1-10 mSv	10 **** 3- 10 mSv 2 2 [ped]				0	0	0	0	0	0	0	0
US chest	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	2	2	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
		References		Study	/ Quality										
		33 (21705131)			2										

Variant 3: Suspected pathologic rib fracture. Initial imaging.

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

	Appropriateness	207						F	inal	Tabu	latio	ns			
Procedure	Category	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
Radiography chest	Usually appropriate	Limited	⊛ < 0.1 mSv		8	8	0	0	0	0	0	0	0	0	0
		References		Study Quality											
		38 (27498118)			4										
		37 (10492357)	2												
		36 (23017193)													
CT chest without IV contrast	Usually appropriate	Limited	ତେତେ 1-10 mSv	&&&& 3- 10 mSv [ped]	7	7	0	0	0	0	0	0	0	0	0
		References		V [ped] Study Quality					•			•			
		36 (23017193)													
Bone scan whole body	Usually appropriate	Limited	ବଟତ 1-10 mSv	& & & & 3- 10 mSv [ped]	7	7	0	0	0	0	0	0	0	0	0
		References		Study	y Quality										
		30 (7261514)			4										
FDG-PET/CT skull base to mid- thigh	May be appropriate	Limited	ଷଷଷଷ 10-30 mSv	≎≎≎≎≎ 3- 10 mSv [ped]	5	5	0	0	0	0	0	0	0	0	0
		References		Study	y Quality										
		37 (10492357)			2										
		36 (23017193)			3			_	_	_		_			
Radiography rib views	May be appropriate	Expert Consensus	ଝଝଝ 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	y Quality										
		36 (23017193)			3										

CT chest without and with IV contrast	Usuall approp	Limited	Limited 😵 1-10 mSv			1	1	0	0	0	0	0	0	0	0	0
		References	References			Study Quality										
		36 (23017193)	<u>36 (23017193)</u>			3										
US chest	Usuall approp	Limited				1	1	0	0	0	0	0	0	0	0	0
		References	References			Study Quality										
		 38 (27498118)	38 (27498118)			4										
		37 (10492357)				2										
		36 (23017193)	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.