American College of Radiology ACR Appropriateness Criteria®

Fever Without Source or Unknown Origin-Child

Variant 1: Child up to 3 months of age. Fever without source and clinical concern for occult pneumonia. Initial imaging.

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Procedure	Category	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
Radiography chest	May be appropriate	Limited	 		5	5	1	1	1	4	7	1	0	0	1
		References		Study	/ Quality										
		13 (3347713)			3										
		23 (27106368)	ı		4										
		14 (34425771)	ı		3										
		21 (-3196031)			1										
CT abdomen and pelvis with IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	1	1	12	1	0	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]	1	1	13	0	0	0	0	0	0	0	0
CT abdomen and pelvis without and with IV contrast	Usually not appropriate	Expert Consensus	ଡେଡେଡ 10-30 mSv		1	1	12	1	0	0	0	0	0	0	0
CT chest with IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	1	1	8	2	2	0	0	0	1	0	0
CT chest without IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	1	1	8	3	0	0	1	0	1	0	0

CT chest without and with IV contrast	Usually not appropriate	Expert Consensus	≎ ⊛≎ 1-10 mSv	≎≎≎≎ 3- 10 mSv [ped]	1	1	11	0	0	1	1	0	0	0	0
MRI chest without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	11	1	0	1	0	0	0	0	0
MRI chest without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	11	0	1	1	0	0	0	0	0
MRI whole body without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	12	0	0	1	0	0	0	0	0
MRI whole body without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	12	0	0	1	0	0	0	0	0
FDG-PET/CT whole body	Usually not appropriate	Expert Consensus	���� 10-30 mSv	���� 3- 10 mSv [ped]	1	1	12	0	0	0	1	0	0	0	0
US chest	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	15	0	0	0	0	0	1	0	0
FDG-PET/MRI whole body	Usually not appropriate	Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	1	1	12	0	0	1	0	0	0	0	0

Variant 2: Child aged 3 to 36 months. Fever without source and with low risk for occult pneumonia. Initial imaging.

	Appropriateness	COF			- ·	3.5.31			F	inal [Гаbu	latio	ns		
Procedure	Category	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
Radiography chest	May be appropriate	Limited	 <0.1 mSv		4	4	0	2	2	5	5	1	1	0	0

References	Study Quality
29 (2119118)	4
30 (34694254)	2
31 (34845493)	3

CT abdomen and pelvis with IV contrast	Usually not appropriate	Expert Consensus	≎≎≎ 1-10 mSv	���� 3- 10 mSv [ped]	1	1	10	0	1	1	0	1	0	0	0
CT abdomen and pelvis without IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	1	1	12	0	0	0	1	0	0	0	0
CT abdomen and pelvis without and with IV contrast	Usually not appropriate	Expert Consensus	୫୫୫୫ 10-30 mSv	⊕⊕⊕⊕⊕ 10-30 mSv [ped]	1	1	12	0	0	0	1	0	0	0	0
CT chest with IV contrast	Usually not appropriate	Expert Consensus	≎≎≎ 1-10 mSv	���� 3- 10 mSv [ped]	1	1	11	0	1	1	0	0	0	0	0
CT chest without IV contrast	Usually not appropriate	Expert Consensus	≎≎≎ 1-10 mSv	��� 3- 10 mSv [ped]	1	1	12	0	0	1	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	12	0	0	1	0	0	0	0	0
CT paranasal sinuses with IV contrast	Usually not appropriate	Expert Consensus	⊕⊕ 0.1-1mSv	��� 0.3- 3 mSv [ped]	1	1	10	0	1	1	1	0	0	0	0
CT paranasal sinuses without IV contrast	Usually not appropriate	Expert Consensus	�� 0.1-1mSv	��� 0.3- 3 mSv [ped]	1	1	10	0	1	0	2	0	0	0	0
CT paranasal sinuses without and with IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	1	1	11	0	0	2	0	0	0	0	0
CT neck with IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv	��� 0.3- 3 mSv [ped]	1	1	11	0	0	0	2	0	0	0	0
CT neck without IV contrast	Usually not appropriate	Expert Consensus	≎≎≎ 1-10 mSv	��� 0.3- 3 mSv [ped]	1	1	12	0	0	1	0	0	0	0	0
CT neck without and with IV contrast	Usually not appropriate	Expert Consensus	≎≎≎ 1-10 mSv	���� 3- 10 mSv [ped]	1	1	12	0	0	1	0	0	0	0	0

MRI chest without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	11	0	1	1	0	0	0	0	0
MRI chest without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	11	0	1	0	1	0	0	0	0
MRI whole body without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	9	1	1	1	0	1	0	0	0
MRI whole body without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	11	0	0	0	1	1	0	0	0
FDG-PET/CT whole body	Usually not appropriate	Expert Consensus	���� 10-30 mSv	���� 3- 10 mSv [ped]	1	1	15	1	0	0	0	0	0	0	0
US abdomen	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	9	5	2	0	0	0	0	0	0
US kidneys and bladder	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	13	2	1	0	0	0	0	0	0
FDG-PET/MRI whole body	Usually not appropriate	Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	1	1	9	1	1	0	0	1	1	0	0

Variant 3: Child. Fever without source and neutropenia. Initial imaging.

ъ .	Appropriateness	COF	A L L DDI	D I DDI	D 41	24.11			F	inal T	Гаbu	latio	ns		
Procedure	Category	SOE	Adults RRL	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9
CT abdomen and pelvis with IV contrast	May be appropriate	Limited	��� 1-10 mSv	���� 3- 10 mSv [ped]	6	6	0	0	0	2	2	4	3	1	1

References	Study Quality
36 (21265012)	4
35 (25929242)	3
34 (28459614)	4

CT chest with IV contrast	May be appropriate	Limited	��� 1-10 mSv	���� 3- 10 mSv [ped]	6	6	0	0	0	2	1	4	1	4	1
		References		Study Qu	ıality										
		36 (21265012)		4											
		35 (25929242)		3											
		34 (28459614)		4											
		37 (31211850)		3											
FDG-PET/CT whole body	May be appropriate	Limited	���� 10-30 mSv	���� 3- 10 mSv [ped]	6	6	0	0	1	0	4	2	4	2	0
		References		Study Qu	ıality										
		41 (24869631)		3											
		42 (26187213)		4											
		39 (35115619)		4											
		40 (29235187) 4													
CT chest without IV contrast	May be appropriate	Limited	��� 1-10 mSv	���� 3- 10 mSv [ped]	5	5	0	0	2	2	5	7	0	0	0
		References		Study Qu	ıality										
		36 (21265012)		4											
		35 (25929242)		3											
		34 (28459614)		4											
CT paranasal sinuses with IV contrast	May be appropriate	Limited	�� 0.1-1mSv	��� 0.3- 3 mSv [ped]	5	5	2	0	3	3	8	0	0	0	0
		References		Study Qu	ıality										
		36 (21265012)		Study Quanty 4											
		35 (25929242)		3											
		34 (28459614)		4											
CT paranasal sinuses without IV contrast	May be appropriate	Limited	�� 0.1-1mSv	��� 0.3- 3 mSv [ped]	5	5	1	0	3	0	10	1	1	0	0
		References		Study Quality											

		26 (01065010)			4										
		36 (21265012)			4										
		35 (25929242)			3										
		34 (28459614)			4										
Radiography chest	May be appropriate (Disagreement)	Expert Opinion	⊕ <0.1 mSv		5	5	0	0	2	1	4	2	3	2	2
		References		Study	Quality										
		46 (21826781)			4										
		34 (28459614)			4										
		44 (-3196033)			4										
		45 (22278307)			4					_					
FDG-PET/MRI whole body	May be appropriate	Limited	≎⊕⊕ 1-10 mSv	���� 3- 10 mSv [ped]	4	4	1	1	3	4	6	1	0	0	0
		References		Study	Quality										
		40 (29235187)			4										
		43 (34277510)			4										
MRI whole body without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	3	3	5	1	2	0	4	1	0	0	0
US abdomen	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	3	3	3	4	7	1	1	0	0	0	0
CT chest without and with IV contrast	Usually not appropriate	Limited	��� 1-10 mSv	≎≎≎≎ 3- 10 mSv [ped]	2	2	6	4	1	0	1	1	0	0	0
		References		Study	Quality										
		36 (21265012)			4										
		35 (25929242)			3										
		34 (28459614)			4										
		37 (31211850)			3										
CT paranasal sinuses without and with IV contrast	Usually not appropriate	Limited	��� 1-10 mSv	���� 3- 10 mSv [ped]	2	2	6	4	1	0	2	0	0	0	0
		References	Study	Quality											

			36 (21265012)			4										
	_		35 (25929242)			3										
			34 (28459614)			4			1		1		ı			
MRI abdomen and pelvis without and with IV contrast	Usually r appropria		Expert Consensus	O 0 mSv	O 0 mSv [ped]	2	2	6	2	2	2	0	1	0	0	0
MRI whole body without and with IV contrast	Usually r appropria		Expert Consensus	O 0 mSv	O 0 mSv [ped]	2	2	6	2	2	0	2	1	0	0	0
CT abdomen and pelvis without IV contrast	Usually r appropria		Limited	��� 1-10 mSv	���� 3- 10 mSv [ped]	1	1	7	4	0	1	1	0	0	0	0
			References		<u> </u>	y Quality		•	•				,			
			36 (21265012)			4										
			35 (25929242)			3										
		34 (28459614)				4										
CT abdomen and pelvis without and with IV contrast	Usually r appropria		Limited	ଡ଼େଡ଼େଡ଼ 10-30 mSv		1	1	7	3	2	0	0	1	0	0	0
			References		Study	y Quality										
			36 (21265012)			4										
			35 (25929242)			3										
			34 (28459614)			4										
CT neck with IV contrast	Usually r appropria		Expert Consensus	��� 1-10 mSv	��� 0.3- 3 mSv [ped]	1	1	8	2	1	1	0	1	0	0	0
CT neck without IV contrast	Usually r appropria		Expert Consensus	��� 1-10 mSv	��� 0.3- 3 mSv [ped]	1	1	10	1	1	0	0	1	0	0	0
CT neck without and with IV contrast	Usually r appropria		Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	1	1	10	1	1	0	1	0	0	0	0
MRI abdomen and pelvis without IV contrast	Usually r appropria		Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	7	2	2	1	1	0	0	0	0

MRI chest without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	8	2	2	0	1	0	0	0	0
MRI chest without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	8	2	2	0	1	0	0	0	0
Fluoride PET/CT whole body	Usually not appropriate	Expert Consensus	���� 10-30 mSv	���� 3- 10 mSv [ped]	1	1	7	4	1	0	0	1	0	0	0
Bone scan and WBC scan whole body	Usually not appropriate	Expert Consensus		���� 3- 10 mSv [ped]	1	1	10	1	0	0	1	0	1	0	0
3-phase bone scan whole body	Usually not appropriate	Expert Consensus		���� 3- 10 mSv [ped]	1	1	11	0	0	0	0	2	0	0	0

Variant 4: Child. Fever of unknown origin. Initial Imaging.

D 1	Appropri	iateness	GOF.	A L I/ DDI		D. J. DDI	D (1	3.5.11	Final Tabulations						ns			
Procedure	Category		SOE Adults RR		L	Peds RRL	Rating	Median	1	2	3	4	5	6	7	8	9	
Radiography chest	May be appropriate		Limited	 			6	6	0	0	0	1	5	7	1	0	2	
			References		Study Quality													
			24 (26330472)		4													
MRI whole body without IV contrast	May approp	be oriate				O 0 mSv [ped]	5	5	1	0	3	1	9	1	1	0	0	
		References			Study Quality													
			62 (24826973)				4											
			63 (26892067)				4											
			61 (30900227)				4											
			47 (32767967)				4											
MRI whole body without and with IV contrast	May approp		Limited	O 0 mSv		O 0 mSv [ped]	5	5	1	0	2	1	11	1	0	0	0	

		References				Study	Quality										
	•	62 (24826973)			Study Quanty 4												
	•	63 (26892067)			4												
	•	61 (30900227)					4										
			47 (32767967)				4										
FDG-PET/MRI whole body	May approp	be riate	Limited	��� 1-10 mSv		���� 3- 10 mSv [ped]	5	5	0	0	2	2	4	4	1	0	0
			References			Study	Quality										
			59 (24762622)		4												
			60 (31012760)		4												
			43 (34277510)		4												
FDG-PET/CT whole body	May approp		Strong	���� 10-30 mSv)	���� 3- 10 mSv [ped]	4	4	1	2	4	3	3	0	1	0	0
		References			Study Quality												
		57 (23479196)					4										
		41 (24869631)			3												
			51 (28928271)		2												
			50 (30205705)			Not A	Assessed										
			53 (28600002)			C	Good										
			52 (31271266)				3										
			39 (35115619)				4										
			54 (26554525)		3												
			56 (30412093)		Not Assessed												
			49 (32498991)		4												
			25 (27037917)		Good												
	,		48 (27339873)		Not Assessed												
			55 (31982625)		2												
			58 (32030452)		3												
US abdomen	Usually approp		Expert Consensus	O 0 mSv		O 0 mSv [ped]	3	3	3	5	6	1	0	1	0	0	0

CT abdomen and pelvis with IV contrast	Usually not appropriate	Expert Consensus	≎≎≎ 1-10 mSv	���� 3- 10 mSv [ped]	2	2	6	1	4	1	0	0	1	0	0
CT paranasal sinuses with IV contrast	Usually not appropriate	Expert Consensus	�� 0.1-1mSv	��� 0.3- 3 mSv [ped]	2	2	5	4	2	0	0	1	1	0	0
CT paranasal sinuses without IV contrast	Usually not appropriate	Expert Consensus	�� 0.1-1mSv	≎≎≎ 0.3- 3 mSv [ped]	2	2	6	1	4	0	1	0	1	0	0
CT abdomen and pelvis without IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	1	1	10	1	1	0	1	0	0	0	0
CT abdomen and pelvis without and with IV contrast	Usually not appropriate	Expert Consensus	���� 10-30 mSv	≎≎≎≎≎ 10-30 mSv [ped]	1	1	10	1	0	0	1	1	0	0	0
CT chest with IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	1	1	7	1	3	1	0	1	0	0	0
CT chest without IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv	���� 3- 10 mSv [ped]	1	1	7	1	2	1	1	1	0	0	0
CT chest without and with IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv	≎≎≎≎ 3- 10 mSv [ped]	1	1	10	1	0	0	1	0	1	0	0
CT paranasal sinuses without and with IV contrast	Usually not appropriate	Expert Consensus	≎≎≎ 1-10 mSv	���� 3- 10 mSv [ped]	1	1	10	1	1	0	0	1	0	0	0
CT neck with IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv	��� 0.3- 3 mSv [ped]	1	1	9	1	1	1	0	1	0	0	0
CT neck without IV contrast	Usually not appropriate	Expert Consensus	��� 1-10 mSv	��� 0.3- 3 mSv [ped]	1	1	10	1	1	0	1	0	0	0	0
CT neck without and with IV contrast	Usually not appropriate	Expert Consensus	≎≎≎ 1-10 mSv	���� 3- 10 mSv [ped]	1	1	10	1	1	0	0	1	0	0	0

MRI chest without IV contrast	Usually approp		Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	7	3	2	0	1	0	0	0	0
MRI chest without and with IV contrast	Usually approp		Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	7	3	2	0	1	0	0	0	0
Fluoride PET/CT whole body	Usually approp		Expert Consensus	���� 10-30 mSv	���� 3- 10 mSv [ped]	1	1	7	4	1	0	0	1	0	0	0
Bone scan and WBC scan whole body	Usually approp		Limited		���� 3- 10 mSv [ped]	1	1	8	2	2	0	1	0	0	0	0
			References		Study Quality											
			24 (26330472)			4										
3-phase bone scan whole body	Usually approp		Limited		���� 3- 10 mSv [ped]	1	1	9	1	2	0	1	0	0	0	0
		References			Study Quality											
			24 (26330472)													

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.