ACR Appropriateness Criteria® Imaging of Possible Tuberculosis

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Abstract

Pulmonary tuberculosis remains a major cause of disease worldwide and an important public health hazard in the United States. The imaging evaluation depends to a large degree on clinical symptoms and whether active disease is suspected or a subject is at high risk for developing active disease.

The American College of Radiology Appropriateness Criteria are evidence-based guidelines for specific clinical conditions that are reviewed annually by a multidisciplinary expert panel. The guideline development and revision include an extensive analysis of current medical literature from peer reviewed journals and the application of well-established methodologies (RAND/UCLA Appropriateness Method and Grading of Recommendations Assessment, Development, and Evaluation or GRADE) to rate the appropriateness of imaging and treatment procedures for specific clinical scenarios. In those instances where evidence is lacking or equivocal, expert opinion may supplement the available evidence to recommend imaging or treatment.

Key Words: Appropriateness Criteria, Appropriate Use Criteria, AUC, CT, chest radiography, pulmonary tuberculosis, tuberculosis

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The American College of Radiology seeks and encourages collaboration with other organizations on the development of the ACR Appropriateness Criteria through society representation on expert panels. Participation by representatives from collaborating societies on the expert panel does not necessarily imply individual or society endorsement of the final document.

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Variant 1. Suspect active tuberculosis.

Radiologic Procedure	Rating	Comments	RRL
X-ray chest	9		☢
CT chest without IV contrast	7	This procedure is recommended if x-ray is equivocal.	☢☢☢
CT chest with IV contrast	6		☢☢☢
CT chest without and with IV contrast	3		☢☢☢
MRI chest without IV contrast	3		○
MRI chest without and with IV contrast	3		○

Note: Rating Scale: 1,2,3 = usually not appropriate; 4,5,6 = may be appropriate; 7,8,9 = usually appropriate. IV = intravenous; RRL = relative radiation level.

Variant 2. Newly positive PPD or IGRA OR positive PPD or IGRA with unknown prior status. No clinical symptoms.

Radiologic Procedure	Rating	Comments	RRL
X-ray chest	9		☢
CT chest with IV contrast	4		☢☢☢
CT chest without IV contrast	3		☢☢☢
MRI chest without IV contrast	2		○
MRI chest without and with IV contrast	2		○
CT chest without and with IV contrast	1		☢☢☢

Note: Rating Scale: 1,2,3 = usually not appropriate; 4,5,6 = may be appropriate; 7,8,9 = usually appropriate. IV = intravenous; RRL = relative radiation level.

Variant 3. PPD not available. Placement in group home or skilled nursing facility. No clinical symptoms.

Radiologic Procedure	Rating	Comments	RRL
X-ray chest	9		☢
CT chest with IV contrast	2		☢☢☢
CT chest without IV contrast	2		☢☢☢
MRI chest without IV contrast	2		○
CT chest without and with IV contrast	1		☢☢☢
MRI chest without and with IV contrast	1		○

Note: Rating Scale: 1,2,3 = usually not appropriate; 4,5,6 = may be appropriate; 7,8,9 = usually appropriate. IV = intravenous; RRL = relative radiation level.

Table 1. Relative radiation level designations

RRL	Adult Effective Dose Estimate Range (mSv)	Pediatric Effective Dose Estimate Range (mSv)
○	0	0
☢	<0.1	<0.03
☢☢	0.1-1	0.03-0.3
☢☢☢	1-10	0.3-3
☢☢☢☢	10-30	3-10
☢☢☢☢☢	30-100	10-30

Note: Relative radiation level (RRL) assignments for some of the examinations cannot be made, because the actual patient doses in these procedures vary as a function of a number of factors (eg, region of the body exposed to ionizing radiation, the imaging guidance that is used). The RRLs for these examinations are designated as "varies."