

ACR Appropriateness Criteria[®] Imaging of Possible Tuberculosis

Expert Panel on Thoracic Imaging: *James G. Ravenel, MD^a, Jonathan H. Chung, MD^b, Jeanne B. Ackman, MD^c, Patricia M. de Groot, MD^d, Geoffrey B. Johnson, MD, PhD^e, Clinton Jokerst, MD^f, Fabien Maldonado, MD^g, Barbara L. McComb, MD^b, Robert M. Steiner, MDⁱ, Tan-Lucien H. Mohammed, MD^j*

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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^aPrincipal Author and Panel Chair, Medical University of South Carolina, Charleston, South Carolina.

^bPanel Vice-Chair, National Jewish Health, Denver, Colorado.

^cMassachusetts General Hospital and Harvard Medical School, Boston, Massachusetts.

^dUniversity of Texas MD Anderson Cancer Center, Houston, Texas.

^eMayo Clinic, Rochester, Minnesota.

^fMayo Clinic, Phoenix, Arizona.

^gVanderbilt University Medical Center, Nashville, Tennessee; American College of Chest Physicians.

^hMayo Clinic, Jacksonville, Florida.

ⁱColumbia University Medical Center New York and Temple University Health System, Philadelphia, Pennsylvania.

^jSpecialty Chair, University of Florida College of Medicine, Gainesville, Florida.

Corresponding author and reprints: James G. Ravenel, MD, Department of Radiology, Medical University of South Carolina, 1466 Headquarters Plantation Drive, Johns Island, SC 29455; e-mail: ravenejg@muscc.edu.

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. Reprint requests: publications@acr.org

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Disclaimer: The ACR Committee on Appropriateness Criteria and its expert panels have developed criteria for determining appropriate imaging examinations for diagnosis and treatment of specified medical condition(s). These criteria are intended to guide radiologists, radiation oncologists and referring physicians in making decisions regarding radiologic imaging and treatment. Generally, the complexity and severity of a patient's clinical condition should dictate the selection of appropriate imaging procedures or treatments. Only those examinations generally used for evaluation of the patient's condition are ranked. Other imaging studies necessary to evaluate other co-existent diseases or other medical consequences of this condition are not considered in this document. The availability of equipment or personnel may influence the selection of appropriate imaging procedures or treatments. Imaging techniques classified as investigational by the FDA have not been considered in developing these criteria; however, study of new equipment and applications should be encouraged. The ultimate decision regarding the appropriateness of any specific radiologic examination or treatment must be made by the referring physician and radiologist in light of all the circumstances presented in an individual examination.

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."

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