



Complete Summary

GUIDELINE TITLE

ACR Appropriateness Criteria™ for acute chest pain--suspected myocardial ischemia.

BIBLIOGRAPHIC SOURCE(S)

Stanford W, Bettmann MA, Boxt LM, Gomes AS, Grollman J, Henkin RE, Higgins CB, Kelley MJ, Needleman L, Pagan-Marín H, Polak JF. Acute chest pain--suspected myocardial ischemia. American College of Radiology. ACR Appropriateness Criteria. Radiology 2000 Jun; 215(Suppl): 7-13. [46 references]

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INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT

CATEGORIES

IDENTIFYING INFORMATION AND AVAILABILITY

SCOPE

DISEASE/CONDITION(S)

Acute chest pain, suspected myocardial ischemia

GUIDELINE CATEGORY

Diagnosis

CLINICAL SPECIALTY

Cardiology

Emergency Medicine

Family Practice

Internal Medicine

Radiology

INTENDED USERS

Health Plans
Hospitals
Managed Care Organizations
Physicians
Utilization Management

GUIDELINE OBJECTIVE(S)

To evaluate the appropriateness of initial radiologic examinations for acute chest pain, suspected myocardial ischemia.

TARGET POPULATION

Patients with acute chest pain, suspected myocardial ischemia

INTERVENTIONS AND PRACTICES CONSIDERED

1. Chest film
2. Coronary angiography
3. Transthoracic echocardiography
4. Left ventricular angiography
5. Radionuclide myocardial perfusion scan
6. Radionuclide ventriculogram
7. Infarct avid imaging
8. Transesophageal echocardiography
9. Electron beam computed tomography/multihead ultrafast computed tomography with contrast
10. Magnetic resonance angiography
11. Conventional computed tomography with contrast
12. Magnetic resonance imaging
13. Magnetic resonance perfusion studies
14. Position emission tomography

MAJOR OUTCOMES CONSIDERED

Utility of radiologic examinations in differential diagnosis

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

The guideline developer performed literature searches of recent peer-reviewed medical journals, primarily using the National Library of Medicine's MEDLINE database. The developer identified and collected the major applicable articles.

NUMBER OF SOURCE DOCUMENTS

The total number of source documents identified as the result of the literature search is not known.

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Expert Consensus (Delphi Method)
Weighting According to a Rating Scheme (Scheme Not Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Not applicable

METHODS USED TO ANALYZE THE EVIDENCE

Systematic Review with Evidence Tables

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

One or two topic leaders within a panel assume the responsibility of developing an evidence table for each clinical condition, based on analysis of the current literature. These tables serve as a basis for developing a narrative specific to each clinical condition.

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus (Delphi)

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

Since data available from existing scientific studies are usually insufficient for meta-analysis, broad-based consensus techniques are needed to reach agreement in the formulation of the Appropriateness Criteria. Serial surveys are conducted by distributing questionnaires to consolidate expert opinions within each panel. These questionnaires are distributed to the participants along with the evidence table and narrative as developed by the topic leader(s). Questionnaires are completed by the participants in their own professional setting without influence of the other members. Voting is conducted using a scoring system from 1-9, indicating the least to the most appropriate imaging examination or therapeutic procedure. The survey results are collected, tabulated in anonymous fashion, and redistributed after each round. A maximum of three rounds is conducted and opinions are unified to the highest degree possible. Eighty (80) percent agreement is considered a consensus. If consensus cannot be reached by this method, the panel is convened and group consensus techniques are utilized. The strengths and weaknesses of each test or procedure are discussed and consensus reached whenever possible.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Criteria developed by the Expert Panels are reviewed by the American College of Radiology (ACR) Committee on Appropriateness Criteria and the Chair of the ACR Board of Chancellors.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

ACR Appropriateness Criteria™

Clinical Condition: Acute Chest Pain, Suspected Myocardial Ischemia

| Radiologic Exam Procedure | Appropriateness Rating | Comments |
|--|------------------------|---|
| Chest Film | 9 | Plain films are needed to exclude other causes for chest pain. |
| Coronary Angiography | 8 | Necessary to define extent of stenosis. Usually done late in the work-up. |
| Transthoracic Echocardiography | 7 | Indicated as a screening test to evaluate cardiac function. Inexpensive and portable. |
| Left Ventricular Angiography | 7 | Indicated to define ventricular function as part of the ischemia evaluation. |
| Radionuclide Myocardial Perfusion Scan | 6 | May be indicated to evaluate extent of ischemia. Usually done after initial screening tests suggest ischemia. |
| Radionuclide Ventriculogram | 6 | May be indicated to evaluate cardiac function. |
| Infarct Avid Imaging | 5 | May be indicated in questionable cases to confirm infarction. |
| Transesophageal | 4 | May be indicated to evaluate cardiac |

| | | |
|--|---|--|
| Echocardiography | | function or to rule out aortic dissection. |
| Electron Beam Computed Tomography/Multihead Ultrafast Beam Computed Tomography with Contrast | 4 | Probably not indicated except for quantitating ventricular function. Noncontrast images may be useful in screening for coronary calcification. |
| Magnetic Resonance Angiography | 4 | |
| Conventional Computed Tomography with Contrast | 3 | Little indication except for documenting other sources of chest pain. |
| Magnetic Resonance Imaging | 3 | Little indication except for screening for possible aortic dissection. May have some applicability in evaluating cardiac function. |
| Magnetic Resonance Perfusion Studies | 2 | Research studies show some promise in evaluating infarction. Not extensively used clinically. |
| Position Emission Tomography | 2 | See comments on magnetic resonance perfusion studies. |
| <u>Appropriateness Criteria Scale</u> | | |
| 1 2 3 4 5 6 7 8 9 | | |
| 1=Least appropriate 9=Most appropriate | | |

Summary

The consensus of the panel and the literature review support the chest film in the initial screening of a patient with acute chest pain of suspected myocardial ischemic origin. It supports radionuclide scintigraphy in the evaluation of myocardial perfusion and in the evaluation of ventricular function. The definitive diagnosis is made by cardiac catheterization with coronary angiography and ventriculography. Continuing developments in the assessment of coronary blood flow and myocardial perfusion using magnetic resonance and position emission tomography may prove helpful in the future. The presence of coronary atherosclerosis can be documented by the newer rapid computed tomography technologies, such as electron beam computed tomography or helical or multi-detector computed tomography.

CLINICAL ALGORITHM(S)

Algorithms were not developed from criteria guidelines.

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The recommendations are based on analysis of the current literature and expert panel consensus.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

- Appropriate selection of initial radiologic exam procedures to aid in differential diagnosis of patients with acute chest pain-suspected myocardial ischemia.
- Appropriate selection of radiologic exam procedures for rapid and accurate diagnosis of myocardial infarction. Myocardial infarction is often fatal and establishing the diagnosis rapidly and accurately may be life saving.

POTENTIAL HARMS

None identified

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

An American College of Radiology (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 exams 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 U.S. Food and Drug Administration (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.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better

IOM DOMAIN

Effectiveness
Timeliness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

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ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

1995 (revised 1999)

GUIDELINE DEVELOPER(S)

American College of Radiology - Medical Specialty Society

SOURCE(S) OF FUNDING

The American College of Radiology (ACR) provided the funding and the resources for these ACR Appropriateness Criteria™

GUIDELINE COMMITTEE

ACR Appropriateness Criteria™ Committee, Expert Panel on Cardiovascular Imaging.

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Names of Panel Members: William Stanford, MD; Michael A. Bettmann, MD; Lawrence M. Boxt, MD; Antoinette S. Gomes, MD; Julius Grollman, MD; Robert E. Henkin, MD; Charles B. Higgins, MD; Michael J. Kelley, MD; Laurence Needleman, MD; Heriberto Pagan-Marin, MD; Joseph F. Polak, MD, MPH

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline. It is a revision of a previously issued version (Appropriateness criteria for acute chest pain--suspected myocardial ischemia. Reston [VA]: American College of Radiology [ACR]; 1995. 6 p. [ACR Appropriateness Criteria™]).

The ACR Appropriateness Criteria™ are reviewed after five years, if not sooner, depending upon introduction of new and highly significant scientific evidence. The next review date for this topic is 2004.

GUIDELINE AVAILABILITY

Electronic copies: Available (in PDF format) from the [American College of Radiology \(ACR\) Web site](#).

Print copies: Available from ACR, 1891 Preston White Drive, Reston, VA 20191. Telephone: (703) 648-8900.

AVAILABILITY OF COMPANION DOCUMENTS

None available

PATIENT RESOURCES

None available

NGC STATUS

This summary was completed by ECRI on February 20, 2001. The information was verified by the guideline developer on March 14, 2001.

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