



Complete Summary

GUIDELINE TITLE

ACR Appropriateness Criteria™ for imaging recommendations for patients with dysphagia.

BIBLIOGRAPHIC SOURCE(S)

American College of Radiology (ACR), Expert Panel on Gastrointestinal Imaging. Imaging recommendations for patients with dysphagia. Reston (VA): American College of Radiology (ACR); 2001. 6 p. (ACR appropriateness criteria). [32 references]

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SCOPE

DISEASE/CONDITION(S)

Dysphagia

GUIDELINE CATEGORY

Diagnosis

CLINICAL SPECIALTY

Family Practice
Gastroenterology
Internal Medicine
Neurology
Radiology

INTENDED USERS

Health Plans
Hospitals
Managed Care Organizations
Physicians
Utilization Management

GUIDELINE OBJECTIVE(S)

To evaluate the appropriateness of initial radiologic examinations for patients with dysphagia

TARGET POPULATION

Patients with dysphagia

INTERVENTIONS AND PRACTICES CONSIDERED

1. Barium studies
 - Modified barium swallow
 - Dynamic and static imaging of pharynx
 - Biphasic esophagram (double contrast and single contrast)
 - Single contrast esophagram
2. Endoscopy
3. Esophageal manometry
4. Radionuclide esophageal transit scintigraphy

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

Appropriateness Criteria™

Clinical Condition: Dysphagia

Variant 1: Oropharyngeal dysphagia with an attributable cause.

Radiologic Exam Procedure	Appropriateness Rating	Comments
Barium Studies		
Modified barium swallow	8	
Dynamic and static imaging of pharynx	6	
Biphasic esophagram (double contrast and single contrast)	4	
Single contrast esophagram	4	
Endoscopy	4	
Esophageal manometry	4	
Radionuclide esophageal transit scintigraphy	2	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1=Least appropriate 9=Most appropriate		

Variant 2: Unexplained oropharyngeal dysphagia.

Radiologic Exam Procedure	Appropriateness Rating	Comments
Barium Studies		
Dynamic and static imaging of pharynx	8	
Biphasic esophagram (double contrast and single contrast)	8	
Modified barium swallow	6	
Single contrast esophagram	6	
Endoscopy	4	
Esophageal manometry	4	
Radionuclide esophageal transit scintigraphy	4	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1=Least appropriate 9=Most appropriate		

Variant 3: Substernal dysphagia in immunocompetent patients.

Radiologic Exam Procedure	Appropriateness Rating	Comments
Endoscopy	8	
Barium Studies		
Biphasic esophagram (double contrast and single contrast)	8	
Single contrast esophagram	6	Probably indicated if that is all the patient can do.
Modified barium swallow	4	

Radiologic Exam Procedure	Appropriateness Rating	Comments
Dynamic and static imaging of pharynx	4	
Esophageal manometry	6	
Radionuclide esophageal transit scintigraphy	4	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1=Least appropriate 9=Most appropriate		

Variant 4: Substernal dysphagia in immunocompromised patients.

Radiologic Exam Procedure	Appropriateness Rating	Comments
Endoscopy	8	
Barium Studies		
Biphasic esophagram (double contrast and single contrast)	8	
Single contrast esophagram	5	
Modified barium swallow	4	
Dynamic and static imaging of pharynx	3	
Esophageal manometry	2	
Radionuclide esophageal transit scintigraphy	2	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1=Least appropriate 9=Most appropriate		

Excerpted by the National Guideline Clearinghouse (NGC).

Summary

Optimal evaluation of patients with dysphagia depends on the nature and location of the dysphagia and the clinical setting. The following four scenarios are considered separately:

1. Oropharyngeal dysphagia with an attributable cause
2. Unexplained oropharyngeal dysphagia
3. Substernal dysphagia in immunocompetent patients
4. Substernal dysphagia in immunocompromised patients

Oropharyngeal Dysphagia with an Attributable Cause

When oropharyngeal dysphagia has an attributable cause (e.g., recent stroke, worsening dementia, myasthenia gravis, amyotrophic lateral sclerosis), a modified barium swallow may be performed with the assistance of a speech therapist. The study is facilitated by examining the patient in a speech therapy chair. The modified barium swallow focuses on the oral cavity, pharynx, and cervical esophagus with videofluoroscopy or cine recording to assess abnormalities of both the oral phase of swallowing (e.g., difficulty propelling the bolus) and the pharyngeal phase (e.g., laryngeal penetration, cricopharyngeal dysfunction). The patient may be given high- and low-density barium suspensions as well as other substances of varying consistency (e.g., barium paste or barium-impregnated crackers) to assess the patient's ability to swallow solid or semisolid substances. In conjunction with a speech therapist, various compensatory maneuvers (e.g., a chin-tuck position) may be tried to prevent aspiration or other types of swallowing dysfunction.

Unexplained Oropharyngeal Dysphagia

In patients with unexplained oropharyngeal dysphagia, a more detailed barium study may be performed in order to assess both functional and structural abnormalities of the pharynx. As in the modified barium swallow, a dynamic examination of the pharynx with videofluoroscopy or cine recording permits assessment of both the oral and pharyngeal phases of swallowing. However, static images of the pharynx (e.g., double-contrast spot films of the pharynx in frontal and lateral projections with high-density barium) should also be obtained to detect structural abnormalities (e.g., pharyngeal tumors, Zenker's diverticulum). Because some patients with lesions in the esophagus or at the gastric cardia can have referred dysphagia, the esophagus and cardia should also be carefully evaluated as part of the barium study in these patients (see below). In patients with unexplained pharyngeal dysphagia, it has been shown that the combination of videofluoroscopy and static images of the pharynx and esophagus has a higher diagnostic value than either videofluoroscopy or static images alone.

Substernal Dysphagia in Immunocompetent Patients

The biphasic esophagram is a valuable technique for evaluating substernal dysphagia in immunocompetent patients. This technique permits detection of both structural and functional abnormalities of the esophagus. Perhaps the most important structural lesion is carcinoma of the esophagus or esophagogastric junction. In a recent study, double-contrast esophagography was found to have a

sensitivity of 96% in diagnosing cancer of the esophagus or esophagogastric junction, which is comparable to the reported sensitivity of endoscopy for diagnosing these lesions. In two other large series of patients, endoscopy failed to reveal any cases of esophageal carcinoma that had been missed on the barium studies. The findings in these series therefore suggest that endoscopy is not routinely warranted to rule out missed tumors in patients who have normal findings on radiologic examinations.

While double-contrast views are best for detecting mucosal lesions (e.g., tumors, esophagitis), prone single-contrast views with continuous drinking of a low-density barium suspension are best for detecting lower esophageal rings or strictures. It has been shown that lower esophageal rings are two to three times more likely to be diagnosed on prone single-contrast views than on upright double-contrast views because of inadequate distention of the distal esophagus when the patient is upright. In one study, the biphasic esophagram was found to detect about 95% of all lower esophageal rings, whereas endoscopy detected only 76% of these rings. Similarly, biphasic esophagrams have been found to have a sensitivity of about 95% in detecting peptic strictures, sometimes revealing strictures that are missed with endoscopy.

Alternatively, endoscopy may be performed to evaluate the esophagus for structural abnormalities in patients with dysphagia. It is a highly accurate test for esophageal cancer when multiple endoscopic biopsy specimens and brushings are obtained. It also is more sensitive than double-contrast esophagography in diagnosing mild reflux esophagitis or other subtle forms of esophagitis. However, endoscopy is a more expensive and invasive test than the barium study. It also is less sensitive than the barium study for detecting lower esophageal rings or strictures (see above) and does not permit evaluation of esophageal motility disorders. For these reasons, the barium study is often recommended, even by gastroenterologists, as the initial diagnostic test for patients with dysphagia.

The biphasic esophagram is also a useful test in patients with esophageal motility disorders causing dysphagia. Videofluoroscopy of discrete swallows of a low-density barium suspension in the prone right anterior oblique position permits detailed assessment of esophageal motility. In various studies, videofluoroscopy has been found to have an overall sensitivity of 80%-89% and specificity of 79%-91% for the diagnosing of esophageal motility disorders (e.g., achalasia, diffuse esophageal spasm) in comparison to esophageal manometry. When a significant esophageal motility disorder is detected on barium study, manometry may be performed to further elucidate the nature of this motility disorder. Alternatively, radionuclide esophageal transit scintigraphy is a simple, noninvasive, and quantitative test of esophageal motility and emptying.

Substernal Dysphagia in Immunocompromised Patients

The major consideration in immunocompromised patients with dysphagia or odynophagia (painful swallowing) is infectious esophagitis, most commonly due to *Candida albicans* or herpes simplex virus. In human immunodeficiency virus (HIV)-positive patients, *Candida* is the cause of esophageal symptoms in a majority of patients, with cytomegalovirus (CMV), herpes simplex, and idiopathic ulcers (also known as HIV ulcers) the other most common etiologies. HIV-positive patients with esophageal symptoms are generally treated empirically with

antifungal therapy without undergoing a diagnostic examination. Most gastroenterologists prefer that those with persistent symptoms (or severe symptoms at presentation) be evaluated by endoscopy. Endoscopy is preferred because of the ability to take specimens (e.g., histology, cytology, immunostain, culture). The endoscopic or radiographic appearance alone does not accurately predict diseases other than Candida; diagnosis requires the acquisition of specimens for laboratory study. Barium esophagography is preferred in some centers and can be useful in guiding management. Double-contrast esophagography is more accurate than single-contrast esophagography for detecting ulcers or plaques associated with infectious esophagitis. However, single-contrast esophagrams may be performed if the patient is too sick or debilitated to tolerate a double-contrast examination. Patients with radiographically diagnosed Candida or herpes esophagitis may be treated with antifungal or antiviral agents without endoscopic evaluation; but endoscopy is warranted for patients with giant esophageal ulcers in order to differentiate cytomegalovirus and HIV, so that appropriate therapy can be started.

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

Selection of appropriate radiologic imaging procedures for evaluation of patients with dysphagia

POTENTIAL HARMS

Not stated

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

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

American College of Radiology (ACR), Expert Panel on Gastrointestinal Imaging. Imaging recommendations for patients with dysphagia. Reston (VA): American College of Radiology (ACR); 2001. 6 p. (ACR appropriateness criteria). [32 references]

ADAPTATION

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

DATE RELEASED

1998 (revised 2001)

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 Gastrointestinal Imaging

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Panel Members: Marc S. Levine, MD; Philip W. Ralls, MD; Robert L. Bree, MD; Seth N. Glick, MD; Jay P. Heiken, MD; James E. Huprich, MD; Michelle L. Robbin, MD; Pablo R. Ros, MD, MPH; William P. Shuman, MD; Frederick Leslie Greene, MD; Loren A. Laine, MD; Keith Lillemoe, MD

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline. It updates a previous version: ACR Appropriateness Criteria™ for imaging recommendations for patients with dysphagia. *Radiology* 2000 Jun;215(Suppl):225-30.

The ACR Appropriateness Criteria™ are reviewed every five years, if not sooner, depending on the introduction of new and highly significant scientific evidence. The next review date for this topic is 2006.

GUIDELINE AVAILABILITY

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

Print copies: Available from the American College of Radiology, 1891 Preston White Drive, Reston, VA 20191. Telephone: (703) 648-8900.

AVAILABILITY OF COMPANION DOCUMENTS

The following is available:

- American College of Radiology ACR Appropriateness Criteria™ introduction. Reston (VA): American College of Radiology; 6 p. Available in Portable Document Format (PDF) from the [ACR Web site](#).

PATIENT RESOURCES

None available

NGC STATUS

This summary was completed by ECRI on March 19, 2001. The information was verified by the guideline developer on March 29, 2001. This summary was updated by ECRI on July 31, 2002. The updated information was verified by the guideline developer on October 1, 2002.

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