



## Complete Summary

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### GUIDELINE TITLE

ACR Appropriateness Criteria® for chronic hip pain.

### BIBLIOGRAPHIC SOURCE(S)

American College of Radiology (ACR), Expert Panel on Musculoskeletal Imaging. Chronic hip pain. Reston (VA): American College of Radiology (ACR); 2003. 6 p. (ACR appropriateness criteria). [31 references]

### GUIDELINE STATUS

This is the current release of the guideline.

It is a revision of a previously issued version (Chronic hip pain. American College of Radiology. ACR Appropriateness Criteria. Radiology 2000 Jun;215(Suppl):391-6).

All Appropriateness Criteria™ topics are reviewed annually and updated as appropriate.

## COMPLETE SUMMARY CONTENT

SCOPE  
METHODOLOGY - including Rating Scheme and Cost Analysis  
RECOMMENDATIONS  
EVIDENCE SUPPORTING THE RECOMMENDATIONS  
BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS  
QUALIFYING STATEMENTS  
IMPLEMENTATION OF THE GUIDELINE  
INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT  
CATEGORIES  
IDENTIFYING INFORMATION AND AVAILABILITY  
DISCLAIMER

## SCOPE

### DISEASE/CONDITION(S)

Chronic hip pain

### GUIDELINE CATEGORY

Diagnosis

**CLINICAL SPECIALTY**

Family Practice  
Internal Medicine  
Nuclear Medicine  
Orthopedic Surgery  
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 chronic hip pain

**TARGET POPULATION**

Patients with chronic hip pain

**INTERVENTIONS AND PRACTICES CONSIDERED**

1. Magnetic resonance imaging (MRI) (with or without contrast)
2. Ultrasound
3. Computed tomography (CT)
4. Computed tomography with intra-articular contrast
5. Radionuclide scan
6. Arthrography and aspiration
7. Arthrography with anesthetic or anesthetic and steroid
8. Injection with anesthetic or anesthetic and steroid

**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**

Weighting According to a Rating Scheme (Scheme Not Given)

#### **RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE**

Not stated

#### **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: Chronic Hip Pain**

#### **Variant 1: X-ray negative, suspect osseous or surrounding soft-tissue abnormality, excluding osteoid osteoma**

<b>Radiologic Exam Procedure</b>	<b>Appropriateness Rating</b>	<b>Comments</b>
<b>Magnetic Resonance Imaging (MRI)</b>		
Without contrast	9	
With intravenous (IV) contrast	6	If required after review of noncontrast study.
Ultrasound	2	
Computed tomography(CT)	2	
CT with intra-articular contrast	2	
Arthrography and aspiration	2	
Radionuclide scan	1	

<b>Radiologic Exam Procedure</b>	<b>Appropriateness Rating</b>	<b>Comments</b>
<b>Appropriateness Criteria Scale</b>		
<b>1 2 3 4 5 6 7 8 9</b>		
<b>1=Least appropriate 9=Most appropriate</b>		

**Variant 2: X-ray negative, suspect osteonecrosis (ON). Includes circumstance in which hip is asymptomatic but ON is suspected due to known predisposing factors**

<b>Radiologic Exam Procedure</b>	<b>Appropriateness Rating</b>	<b>Comments</b>
<b>MRI</b>		
Without contrast	9	
With IV contrast	2	
Ultrasound	2	
CT	2	
CT with intra-articular contrast	2	
Radionuclide scan	2	
Arthrography and aspiration	2	
Arthrography with anesthetic or anesthetic and steroid	2	
<b>Appropriateness Criteria Scale</b>		
<b>1 2 3 4 5 6 7 8 9</b>		
<b>1=Least appropriate 9=Most appropriate</b>		

**Variant 3: X-ray negative, suspect osteoid osteoma**

<b>Radiologic Exam Procedure</b>	<b>Appropriateness Rating</b>	<b>Comments</b>
CT	9	
CT with intra-articular contrast	2	
<b>MRI</b>		
Without contrast	2	
With IV contrast	2	
Ultrasound	2	
Radionuclide scan	2	
Arthrography and aspiration	2	
Arthrography with anesthetic or anesthetic and steroid	2	
<b>Appropriateness Criteria Scale</b>		

<b>Radiologic Exam Procedure</b>	<b>Appropriateness Rating</b>	<b>Comments</b>
<b>1 2 3 4 5 6 7 8 9</b>		
<b>1=Least appropriate 9=Most appropriate</b>		

**Variant 4: X-ray negative, suspect labral tear**

<b>Radiologic Exam Procedure</b>	<b>Appropriateness Rating</b>	<b>Comments</b>
<b>MRI</b>		
With intra-articular contrast	9	Use of high resolution in the future may obviate the need for contrast.
Without IV contrast	4	Use of high resolution in the future may obviate the need for contrast.
With IV contrast	1	
Ultrasound	2	
CT	2	
CT with intra-articular contrast	2	
Radionuclide scan	2	
Arthrography and aspiration	2	
Arthrography with anesthetic or anesthetic and steroid	2	At the request of the referring physician who has indicated hip as source of pain.
<b>Appropriateness Criteria Scale</b>		
<b>1 2 3 4 5 6 7 8 9</b>		
<b>1=Least appropriate 9=Most appropriate</b>		

**Variant 5: X-ray negative or mild osteoarthritis, suspect referred pain but wish to exclude hip**

<b>Radiologic Exam Procedure</b>	<b>Appropriateness Rating</b>	<b>Comments</b>
Injection with anesthetic or anesthetic and steroid	9	
<b>MRI</b>		
Without contrast	5	If another imaging study is indicated, MRI is the study of choice.
With contrast	2	
Ultrasound	2	

<b>Radiologic Exam Procedure</b>	<b>Appropriateness Rating</b>	<b>Comments</b>
CT	2	
CT with intra-articular contrast	2	
Radionuclide scan	2	
Arthrography and aspiration	2	
<b>Appropriateness Criteria Scale</b>		
<b>1 2 3 4 5 6 7 8 9</b>		
<b>1=Least appropriate 9=Most appropriate</b>		

**Variant 6: X-ray positive, arthritis uncertain type. Infection not a consideration**

<b>Radiologic Exam Procedure</b>	<b>Appropriateness Rating</b>	<b>Comments</b>
<b>MRI</b>		
Without contrast	2	
With contrast	2	Contrast rarely necessary.
Ultrasound	2	
CT	2	
CT with intra-articular contrast	2	
Radionuclide scan	2	
<b>Appropriateness Criteria Scale</b>		
<b>1 2 3 4 5 6 7 8 9</b>		
<b>1=Least appropriate 9=Most appropriate</b>		

**Variant 7: X-ray positive, suggestive of pigmented villonodular synovitis or osteochondromatosis**

<b>Radiologic Exam Procedure</b>	<b>Appropriateness Rating</b>	<b>Comments</b>
<b>MRI</b>		
Without contrast	9	
With contrast	2	
Ultrasound	2	
CT	2	If MR is not available or contraindicated.
CT with intra-articular contrast	2	
Radionuclide scan	2	
Arthrography and aspiration	2	

Radiologic Exam Procedure	Appropriateness Rating	Comments
Arthrography with anesthetic or anesthetic and steroid	2	
<b>Appropriateness Criteria Scale</b>  <b>1 2 3 4 5 6 7 8 9</b>  <b>1=Least appropriate 9=Most appropriate</b>		

Chronic hip pain is a perplexing clinical problem. Symptoms may be related to numerous etiologies, including trauma, neoplasms, and arthropathies. Pain may be due to osseous, intra-articular, periarticular, or soft-tissue pathology. Referred pain from the lumbar spine, sacroiliac joints, or knee may add to the potentially confusing clinical picture. Very few references deal specifically with this condition, although the imaging of specific disorders has been the subject of many articles.

Clinical data is essential for selecting the most appropriate imaging techniques in patients with chronic hip pain. Range of motion, gait abnormalities, locking or snapping, duration of symptoms, and pain patterns (e.g., worse at night, increased with exercise, relieved by aspirin, etc.) can be very useful for reducing the potentially long list of differential diagnoses. Routine radiographs should be obtained first in most, if not all, cases and may provide specific information for common disorders such as osteoarthritis (OA) or less common disorders such as pigmented villonodular synovitis (PVNS) and primary bony tumors. Whether the plain films are normal or not, they are often of considerable value for the selection of additional techniques and for comparison with studies such as magnetic resonance imaging (MRI) examinations and radionuclide bone scans.

Magnetic resonance imaging is frequently performed after initial radiographs to detect osseous, articular, or soft-tissue abnormalities. MRI is both highly sensitive and specific for the detection of many abnormalities involving the hip or surrounding soft tissues and should in general be the first imaging technique employed following plain films. Osteonecrosis (ON) is probably the most common cause of chronic hip pain for which MRI is routinely employed and the disorder for which the appearance and accuracy of MRI have been most thoroughly demonstrated in the literature. Despite all of the work with the MRI of ON, several controversies have arisen, including the relationship of size of the lesion to progression to collapse and the efficacy of treatment and the potential confusion of the MRI appearance of ON with transient bone marrow edema syndrome or subchondral fractures. MRI can also accurately detect ON in the asymptomatic, contralateral hip in those cases in which ON of the other hip has been diagnosed by plain film.

Other causes of chronic painful hip for which MR has been used with considerable success include radiographically occult acute and stress fractures, acute and chronic soft-tissue injuries, and tumors. The only exceptions to the use of MR as the primary technique following plain films are cases of suspected osteoid osteoma, for which computed tomography (CT) should be performed and labral tears for which MR arthrography should probably be employed. Direct MR arthrography employing the intra-articular injection of a dilute (1:200) solution of

Gd-chelate in saline has been established as a reliable technique for the diagnosis of acetabular labral tears, although several investigators (Potter H, Stoller D, Beltran J—personal communication) have more recently suggested that the use of small-field of view (FOV) (e.g., 18–20 cm) images in conjunction with very-high-resolution matrices (512 x 384) obtained with a fast-spin-echo sequence (FSE) may obviate the need for intra-articular contrast. These same investigators have also suggested that the use of the same high-resolution FSE images may be of value in detecting the loss of articular cartilage resulting from OA much earlier than can be seen with plain films.

Indirect MR arthrography, in which Gd-chelate contrast is administered by IV injection and diffuses into the joint space through the synovium, has been proposed as an alternative to direct MR arthrography for the detection of intra-articular disorders. It is faster and easier to perform than direct arthrography and does not require fluoroscopy. It suffers from less consistent enhancement of the joint space as well as inability to distend the joint capsule. Its value in the assessment of intra-articular disorders of the hip is uncertain. The use of IV Gd-chelate contrast has also been proposed as a means to differentiate between joint fluid and pannus in the knee in patients with inflammatory arthritis, although its value in the hip for this purpose has not been addressed.

Diagnostic and therapeutic joint injections, which can be performed readily at the time of an MR arthrogram or as dedicated procedures, are a useful tool for confirming the location of pain and in some cases helping in its control for a short period. Joint aspiration is also critical in diagnosing the presence of infection or crystal disease. Local articular and extra-articular injections can define the symptomatic site and exclude referred symptoms. Intra-articular injection of a small amount of iodinated contrast medium under fluoroscopic guidance is used to confirm needle position. Sonography can also be used to localize fluid collections for aspiration.

In the presence of normal radiographs, and in the absence of ready access to MR imaging capability, a bone scan may be a useful technique. Radionuclide bone scans are effective for detection of subtle osseous pathology and, when negative, are useful in excluding bone or ligament/tendon attachment abnormalities.

Other techniques such as fluoroscopic motion studies (with or without intra-articular contrast) and ultrasound are useful to evaluate articular and periarticular conditions such as snapping iliopsoas tendon. In one study, real-time ultrasound was used to evaluate the snapping iliopsoas tendon. This method is noninvasive, which is an advantage compared with injection of the tendon sheath and fluoroscopic evaluation.

## **Summary**

Imaging of chronic hip pain is a broad subject, and the imaging assessment of numerous disorders has been described in the literature. Clinical data plays an important role in patients with chronic hip pain. Plain radiographs should be obtained as the first imaging study and, in general, MRI should be obtained as the next imaging study except in cases of suspected osteoid osteoma or labral tear as discussed above. Other imaging techniques as well as image-guided aspiration have selected roles to play in certain disorders.

## **CLINICAL ALGORITHM(S)**

None provided

## **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 radiologic exam procedures to evaluate patients with chronic hip pain

### **POTENTIAL HARMS**

None identified

## **QUALIFYING STATEMENTS**

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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

Living with Illness

### IOM DOMAIN

Effectiveness

## IDENTIFYING INFORMATION AND AVAILABILITY

### BIBLIOGRAPHIC SOURCE(S)

American College of Radiology (ACR), Expert Panel on Musculoskeletal Imaging. Chronic hip pain. Reston (VA): American College of Radiology (ACR); 2003. 6 p. (ACR appropriateness criteria). [31 references]

### ADAPTATION

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

### DATE RELEASED

1998 (revised 2003)

### 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 Musculoskeletal Imaging

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## **FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST**

Not stated

## **GUIDELINE STATUS**

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All Appropriateness Criteria™ topics are reviewed annually and updated as appropriate.

## **GUIDELINE AVAILABILITY**

Electronic copies: Available Portable Document Format (PDF) 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 May 6, 2001. The information was verified by the guideline developer as of June 29, 2001. This NGC summary was updated by ECRI on November 12, 2004. The information was verified by the guideline developer on December 21, 2004.

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