Complete Summary

GUIDELINE TITLE

Chronic wrist pain.

BIBLIOGRAPHIC SOURCE(S)

Dalinka MK, Daffner RH, DeSmet AA, El-Khoury GY, Kneeland JB, Manaster BJ, Morrison WB, Pavlov H, Rubin DA, Schneider R, Steinbach LS, Weissman BN, Haralson RH III, Expert Panel on Musculoskeletal Imaging. Chronic wrist pain. [online publication]. Reston (VA): American College of Radiology (ACR); 2005. 7 p. [17 references]

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: American College of Radiology (ACR), Expert Panel on Musculoskeletal Imaging. Chronic wrist pain. Reston (VA): American College of Radiology (ACR); 2003. 8 p. (ACR appropriateness criteria).

The appropriateness criteria are reviewed annually and updated by the panels as needed, depending on introduction of new and highly significant scientific evidence.

COMPLETE SUMMARY CONTENT

SCOPE
METHODOLOGY - including Rating Scheme and Cost Analysis
RECOMMENDATIONS
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SCOPE

DISEASE/CONDITION(S)

Chronic wrist pain

GUIDELINE CATEGORY

Diagnosis

CLINICAL SPECIALTY

Family Practice
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 wrist pain

TARGET POPULATION

Patients with chronic wrist pain

INTERVENTIONS AND PRACTICES CONSIDERED

1. X-ray
    - Instability series
    - Additional views of the wrist (i.e., carpal tunnel, semipronational oblique)
2. Ultrasound (US)
3. Computed tomography (CT)
4. Magnetic resonance imaging (MRI)
    - With contrast
    - Routine (non-contrast)
5. Nuclear medicine (NUC), bone scan
6. Biopsy with or without aspiration
7. Arthrogram
    - Bilateral
    - Midcarpal
    - Radiocarpal
    - Tricompartmental (unilateral and bilateral)

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 peer-reviewed medical journals, and the major applicable articles were identified and collected.

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 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 for reaching agreement in the formulation of the appropriateness criteria. The American College of Radiology (ACR) Appropriateness Criteria panels use a modified Delphi technique to arrive at consensus. 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 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 percent agreement is considered a consensus. This modified Delphi technique enables individual, unbiased expression, is economical, easy to understand, and relatively simple to conduct.

If consensus cannot be reached by the Delphi technique, 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. If "No consensus" appears in the rating column, reasons for this decision are added to the comment sections.

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.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

ACR Appropriateness Criteria™

Clinical Condition: Chronic Wrist Pain

Variant 1: With or without prior injury. No specific area of pain specified. Best initial study.

Radiologic Exam Procedure	Appropriateness Rating	Comments
X-ray, wrist	9	

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

Variant 2: Routine radiographs normal or nondiagnostic. Next study.

Radiologic Exam Procedure	Appropriateness Rating	Comments
MRI, wrist	9	Most of the time, imaging is not required. If imaging is to be performed, this is the study of choice.
US, wrist	1	
CT, wrist	1	
NUC, bone scan	1	
Biopsy/aspiration, wrist	1	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1 = Least appropriate 9 = Most appropriate		

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

Variant 3: Suspect arthritis. Routine radiographs normal or nondiagnostic. Next study.

Radiologic Exam Procedure	Appropriateness Rating	Comments
MRI, wrist, with contrast	4	Most of the time, imaging is not required. If imaging is to be performed, this is the study of choice.
US, wrist	1	
CT, wrist	1	
NUC, bone scan	1	
Biopsy, wrist	1	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9		

Radiologic Exam Procedure	Appropriateness Rating	Comments
1 = Least appropriate 9 = Most appropriate		

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

Variant 4: Arthritis on radiographs nondiagnostic on type, exclude infection. Next study.

Radiologic Exam Procedure	Appropriateness Rating	Comments
Biopsy/aspiration, wrist	9	
US, wrist	1	
CT, wrist	1	
MRI, wrist	1	
NUC, bone scan	1	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1 = Least appropriate 9 = Most appropriate		

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

Variant 5: On ulnar side, suspect triangular fibrocartilage or lunotriquetral (LT) ligament tear. Radiographs normal. Next study.

Radiologic Exam Procedure	Appropriateness Rating	Comments
Arthrogram, wrist, radiocarpal	9	
MRI, wrist, with contrast	9	Either magnetic resonance (MR) arthrogram or MR routine is appropriate. Depends on availability.
MRI, wrist, routine (non-contrast)	9	Either MR arthrogram or MR routine is appropriate. Depends on availability.
Arthrogram, wrist, tricompartmental	8	If original radiocarpal study is not positive or does not answer the question, this is the next study.

Radiologic Exam Procedure	Appropriateness Rating	Comments
Arthrogram, wrist, midcarpal	1	
Arthrogram, wrist, bilateral	1	
Biopsy, wrist	1	
CT, wrist	1	
X-ray, instability series, wrist	1	
NUC, bone scan	1	
US, wrist	1	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1 = Least appropriate 9 = Most appropriate		

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

Variant 6: Radiographs normal. Suspect soft tissue tumor. Next study.

Radiologic Exam Procedure	Appropriateness Rating	Comments
MRI, wrist, routine (non-contrast)	9	
MRI, wrist, with contrast	8	If routine MRI does not answer question, add contrast
US, wrist	7	US is often helpful in evaluating wrist masses as the very common fluid filled ganglion may be easily distinguished from a solid mass.
CT, wrist	1	
NUC, bone scan	1	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1 = Least appropriate 9 = Most appropriate		

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

Variant 7: Radiographs show positive ulnar variance and irregularity in proximal lunate articular surface. Next study.

Radiologic Exam Procedure	Appropriateness Rating	Comments
Arthrogram, wrist, radiocarpal	2	
Arthrogram, wrist, midcarpal	2	
Arthrogram, wrist, tricompartmental-unilateral	2	
Arthrogram, wrist, tricompartmental-bilateral	2	
US, wrist	2	
CT, wrist	2	
NUC, bone scan	2	
MRI, wrist	2	
Biopsy, wrist	2	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1 = Least appropriate 9 = Most appropriate		

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

Variant 8: Radiographs normal or equivocal. Suspect Kienböck's disease. Next study.

Radiologic Exam Procedure	Appropriateness Rating	Comments
MRI, wrist	9	
US, wrist	2	
CT, wrist	2	
NUC, bone scan	2	
Biopsy, wrist	2	

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

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

Variant 9: Kienböck's disease on radiographs. Next study.

Radiologic Exam Procedure	Appropriateness Rating	Comments
CT, wrist	5	Only if needed to assess degree of collapse and associated fractures
US, wrist	1	
NUC, bone scan	1	
MRI, wrist	1	
Biopsy, wrist	1	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1 = Least appropriate 9 = Most appropriate		

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

Variant 10: Pain for more than 3 weeks. Suspect occult fracture. Radiograph nondiagnostic. Next study.

Radiologic Exam Procedure	Appropriateness Rating	Comments
MRI, wrist	9	
CT, wrist	7	If hook of hamate is suspected, CT is study of choice.
X-ray, wrist, additional views of the wrist - carpal tunnel	2	May be of value if obtained at time of original study
X-ray, wrist, additional views of the wrist - semipronational	2	May be of value if obtained at time of original study

Radiologic Exam Procedure	Appropriateness Rating	Comments
oblique		
US, wrist	1	
NUC, bone scan	1	
Biopsy, wrist	1	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1 = Least appropriate 9 = Most appropriate		

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

Variant 11: Suspect Carpal tunnel syndrome

Radiologic Exam Procedure	Appropriateness Rating	Comments
X-ray, wrist	9	
MRI, wrist	2	If mass is suspected or symptoms recur post surgery.
X-ray, carpal tunnel views	1	
US, wrist	1	
CT, wrist	1	
NUC, bone scan	1	
Biopsy/aspiration, wrist	1	
Arthrogram, wrist	1	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1 = Least appropriate 9 = Most appropriate		

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

The role of imaging in chronic wrist pain has received much attention but remains controversial. There is considerable disagreement about which imaging study, if any, should be performed in a given situation. If one compares the radiologic literature to the orthopedic literature, the controversy becomes apparent.

Most physicians agree that the imaging evaluation of the painful wrist should begin with radiographs. This simple, relatively inexpensive study may establish a specific diagnosis in patients with arthritis, complications of injury, infection, some bone or soft tissue tumors; and occasionally in patients with wrist instability. The standard radiographic examination consists of posteroanterior (PA) and lateral views, and often an oblique view as well. Specific suspected problems may require additional views (e.g., posteroanterior in ulnar deviation to look for a scaphoid fracture). If the patient is suspected of having wrist instability, other views are often added to this routine. There is no universal or near-universal standard for this series, and it can consist of anything from posteroanterior views in radial and ulnar deviation to bilateral studies with multiple views of each wrist.

Fluoroscopy or video imaging is sometimes recommended to establish the diagnosis of dynamic wrist instability, and it has been suggested that it is a cost-effective method of making this diagnosis.

Bone scintigraphy has been used for the diagnosis of occult wrist fractures and also as a screening procedure in patients with wrist pain and negative radiographs. In these cases, a negative bone scan may obviate the need for further work-up.

Wrist arthrography, utilizing a radiocarpal injection, was commonly used in the diagnosis of tears of the triangular fibrocartilage (TFC) and interosseous ligaments. Many authors have replaced the standard radiocarpal wrist arthrogram with a three-injection technique, with injections into the radiocarpal, midcarpal, and distal radial-ulnar joints. Some authors have advocated bilateral tricompartmental arthrography because bilateral intercarpal communications are not uncommon.

Recently, magnetic resonance imaging (MRI) has been advocated for patients with chronic wrist pain because it provides a global examination of both the osseous and soft-tissue structures. It may be diagnostic in patients with triangular fibrocartilage and intraosseous ligament tears, occult fractures, avascular neurosis (AVN), and miscellaneous other abnormalities. It may aid in treatment planning for bone and soft-tissue tumors. Contrast-enhanced and dynamic MRI have been suggested in specific situations such as detecting erosions and their progression in rheumatoid arthritis. Some investigators have used MR arthrography, both direct and indirect, to detect ligamentous abnormalities of the wrist. One study found that indirect MR arthrography was more sensitive than conventional MRI in detecting scapholunate abnormalities but did not improve sensitivity in detecting triangular fibrocartilage or lunatotriquetral tears.

A recent paper showed that immediate MRI for patients with possible occult wrist fractures with a modified screening protocol was nearly equivalent in cost to follow-up with delayed imaging. This included the cost for orthopedic consultation and casting as well as additional follow-up with radiographs and in the orthopedic clinic. The loss of productivity resulting from casts and splints was excluded from the cost analysis.

Another study performed radiography, high-resolution ultrasound, and MRI on 15 consecutive patients with suspected scaphoid fractures. Of nine fractures, five

were positive on radiograph, seven were positive on ultrasound (US), and all nine were present on MRI.

MRI is helpful in diagnosing ulnar-sided pain caused by impaction syndromes. It can differentiate between the impaction syndromes and also detect other causes of ulnar-sided pain including occult fractures and triangular fibrocartilage (TFC) tears.

Other authors used computed tomography (CT) post arthrography for the diagnosing ligament injuries of the wrist and claimed that it increased precision without affecting the sensitivity or specificity of the diagnosis. One study indicated that MR arthrography increased the diagnostic performance of the examination.

Tenography has a few advocates, but most authorities believe it has limited utility. CT can be used, particularly in the follow-up of complex fractures or distal radioulnar subluxations.

Many articles, particularly in the orthopedic literature, dispute the value of imaging in the diagnosis of ligamentous tears, because the authors believe that arthroscopy is more accurate and that treatment can be performed along with the diagnostic portions of the procedure. According to the American College of Radiology (ACR), no outcome or cost analysis studies have been performed regarding the results of the various treatment regimens.

Abbreviations

- CT, computed tomography
- MRI, magnetic resonance imaging
- NUC, nuclear medicine
- US, ultrasound

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 chronic wrist pain

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.

IMPLEMENTATION TOOLS

Personal Digital Assistant (PDA) Downloads

For information about availability, see the "Availability of Companion Documents" and "Patient Resources" fields below.

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)

Dalinka MK, Daffner RH, DeSmet AA, El-Khoury GY, Kneeland JB, Manaster BJ, Morrison WB, Pavlov H, Rubin DA, Schneider R, Steinbach LS, Weissman BN, Haralson RH III, Expert Panel on Musculoskeletal Imaging. Chronic wrist pain. [online publication]. Reston (VA): American College of Radiology (ACR); 2005. 7 p. [17 references]

ADAPTATION

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

DATE RELEASED

1998 (revised 2005)

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

Committee on Appropriateness Criteria, Expert Panel on Musculoskeletal Imaging

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Panel Members: Murray K. Dalinka, MD (Principal Author and Panel Chair); Richard H. Daffner, MD; Arthur A. De Smet, MD; George Y. El-Khoury, MD; John B. Kneeland, MD; B.J. Manaster, MD, PhD; William B. Morrison, MD; Helene Pavlov, MD; David A. Rubin, MD; Robert Schneider, MD; Lynne S. Steinbach, MD; Barbara N. Weissman, MD; Robert H. Haralson III, MD

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

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The appropriateness criteria are reviewed annually and updated by the panels as needed, depending on introduction of new and highly significant scientific evidence.

GUIDELINE AVAILABILITY

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

Appropriateness Criteria Anytime, Anywhere™ (PDA application). Available from the 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:

- ACR Appropriateness Criteria.™ Background and development. Reston (VA): American College of Radiology; 2 p. Electronic copies: Available in Portable Document Format (PDF) from the American College of Radiology (ACR) Web site.

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 11, 2004. The information was verified by the guideline developer on December 21, 2004. This NGC summary was updated by ECRI on January 5, 2006. The updated information was verified by the guideline developer on January 19, 2006.

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