



Complete Summary

GUIDELINE TITLE

AAOS clinical guideline on knee injury.

BIBLIOGRAPHIC SOURCE(S)

American Academy of Orthopaedic Surgeons. AAOS clinical guideline on knee injury: support document. Rosemont (IL): American Academy of Orthopaedic Surgeons; 2001. 6 p. [48 references]

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SCOPE

DISEASE/CONDITION(S)

Acute knee injury, including the following conditions:

- Ligamentous injury
- Meniscal tear
- Patellar dislocation/subluxation
- Contusion
- Patellar or quadriceps tendon rupture

GUIDELINE CATEGORY

Diagnosis
Evaluation
Treatment

CLINICAL SPECIALTY

Emergency Medicine
Family Practice

Internal Medicine
Neurological Surgery
Neurology
Orthopedic Surgery
Physical Medicine and Rehabilitation
Rheumatology
Sports Medicine

INTENDED USERS

Physicians

GUIDELINE OBJECTIVE(S)

- To improve patient care by outlining the appropriate information gathering and decision making processes involved in managing acute knee injuries in adults
- To guide qualified physicians through a series of diagnostic and treatment decisions in an effort to improve the quality and efficiency of care

TARGET POPULATION

Skeletally mature individuals with acute knee injury

INTERVENTIONS AND PRACTICES CONSIDERED

Diagnosis

1. History of knee injury
2. Physical examination
3. Imaging studies (plain radiographs)

Phase I Management

1. Rest
2. Ice
3. Analgesics
4. Immobilization
5. Crutches
6. Straight-leg raise exercises
7. Active range of motion exercises within 3 to 5 days, as pain allows
8. Referral to orthopedic specialist, as needed
9. Evaluation of patient response

MAJOR OUTCOMES CONSIDERED

Not stated

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Evaluation of Existing Guidelines: A search of MEDLINE, the National Guideline Clearinghouse, and the American Medical Association's Clinical Practice Guideline Directory (1999) was performed. No relevant guidelines were located.

Literature Review: The literature review was performed by members of the guideline panel. All articles included met the following criteria:

- Availability within the National Library of Medicine Medline inclusive of the years 1979-1998. Articles used included those published in the English literature dealing with human subjects. Key words used in the search included knee, knee joint, and knee injuries, which produced 1990 articles. Subheadings included diagnosis, radiography, and classification, which produced 173 articles.
- The paper went through the peer review process.
- The paper provided a complete description of the materials and methods used.
- The conclusions of the paper were supported by the data presented within the paper.
- The topic of the paper was relevant to the recommendations developed in the guideline.

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Subjective Review

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Not applicable

METHODS USED TO ANALYZE THE EVIDENCE

Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not applicable

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

The guideline panel worked together in a series of meetings in which the information from the literature was used to develop a "decision tree". This information was supplemented by the consensus opinion of the panel when necessary. Bias was avoided by allowing individual panel members to challenge the consensus opinion.

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

The participating societies and individuals conducted multiple iterations of written review. Modifications (when supported by references from the literature) were then incorporated by the workgroup chairman.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Summarized by the National Guideline Clearinghouse (NGC)

The recommendations for managing adult patients with knee injury are presented in the form of an algorithm, the major components of which are summarized below.

Initial Evaluation and Diagnosis

Significant history

- Acute onset of pain within 72 hours of injury
- Audible pop and immediate swelling with twisting or forced hyperextension
- Direct blow to anterior tibia, forced hyperextension, or axial load
- Direct blow to medial or lateral aspect of knee

- Varus or valgus stress to knee
- Twisting injury - painful popping and catching, delayed swelling
- Direct blow to patella or hyperflexion
- Prior knee surgery

Significant physical examination

- Effusion or acute swelling
- Patellar tenderness or abnormal position
- Tenderness of lateral or medial aspect of knee or of head of fibula
- Joint line tenderness or positive McMurray's test
- Inability to straighten knee or flex knee greater than 90 degrees
- Inability to perform straight-leg raise
- Positive Lachman's test
- Positive posterior drawer test
- Valgus or varus joint instability
- Inability to bear weight 4 steps without assistance

Exclusionary diagnosis

- Limb ischemia
- Joint violation or penetrating trauma
- Deep venous thrombosis
- Septic arthritis

Imaging

Indications for plain radiographs

- Obvious deformity
- Effusion or instability
- Tenderness in head of fibula
- Isolated patellar tenderness
- Inability to flex knee greater than 90 degrees
- Inability to bear weight 4 steps without assistance
- Osteoporotic risk factors or age > 55 years

Significant plain radiographs

- AP
- Lateral
- Tangential view of patellofemoral joint (Merchant view) at 30 degrees knee flexion

If imaging is not indicated, differential diagnosis includes:

- Ligamentous injury (complete/incomplete)
- Patellar dislocation/subluxation
- Meniscal tear
- Contusion
- Patella or quadriceps tendon rupture

If imaging is indicated and a major fracture (supracondylar femur, patella, tibial plateau [weight-bearing surface], or obvious tibiafemoral dislocation) is identified, refer to an Orthopaedic specialist.

If imaging is indicated and an avulsion fracture is identified or the radiograph is negative, consider differential diagnosis.

Findings CONSISTENT with Diagnosis

Ligamentous injury (incomplete)

Findings: Twisting injury or valgus injury, immediate swelling or effusion, hyperextension; negative Lachman's and/or drawer signs; minimal or no varus/valgus instability

Treatment: 4 weeks (see Initial Treatment below)

Ligamentous injury (complete)

Findings: Immediate swelling or effusion; twisting injury, hyperextension, or audible pop; positive Lachman's and/or posterior drawer; varus or valgus joint instability; avulsion fracture off tibial femur

Treatment: Refer to an Orthopaedic specialist

Meniscal Tear

Findings: Delayed swelling; twisting injury; painful popping and catching; effusion; joint line tenderness; positive McMurray's test; negative radiograph

Treatment: 2 weeks (see Initial Treatment below)

Patellar Dislocation/Subluxation

Findings: Direct blow to patella or hyperflexion; twisting injury; effusion; patellar tenderness or deformity; avulsion fracture off patella; negative radiograph

Treatment: 4 weeks (see Initial Treatment below)

Contusion

Findings: Direct blow to knee; localized swelling and tenderness; negative radiograph

Treatment: 4 weeks (see Initial Treatment below)

Patella or Quadriceps Tendon Rupture

Findings: Audible pop; immediate swelling; inability to perform straight-leg raise; patellar deformity

Treatment: refer to an Orthopaedic specialist

Initial Treatment

- Rest
- Ice
- Analgesics
- Immobilization within the first 3 to 5 days as needed
- Crutches as needed
- Straight-leg raise exercises
- Active range of motion exercises within 3 to 5 days, as pain allows

Response to Treatment Criteria

Good:

- Patient satisfied with outcome
- Patient function normal
- Normal range of motion
- No swelling or tenderness

Action: Return to activity

Partial:

- Patient satisfied with progress
- Patient function improving
- Swelling and tenderness improving
- Inability to bear weight

Action: Modify treatment; evaluate need for supervised physical therapy program, musculoskeletal specialist, and/or evaluate need for further specialized imaging study.

Poor:

- Patient dissatisfied with outcome
- Patient function unimproved or worsened
- Persistent swelling
- Inability to bear weight
- Incomplete extension or less than 90 degrees flexion

Action: refer to an Orthopaedic specialist

CLINICAL ALGORITHM(S)

An algorithm is provided in the original guideline document on [Universe of Adult Patients with Knee Injury -- Phase I](#).

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is not specifically stated for each recommendation.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Improved quality and efficiency of care for knee injury

POTENTIAL HARMS

Not stated

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

- This guideline should not be construed as including all proper methods of care or excluding methods of care reasonably directed to obtaining the same results. The ultimate judgment regarding any specific procedure or treatment must be made in light of all circumstances presented by the patient and the needs and resources particular to the locality or institution.
- The major weakness of the Phase I Knee injury guideline is that in the majority of situations presented, a specific diagnosis is not developed. By allowing the first contact physician to develop an initial treatment plan without a definitive diagnosis, it is difficult to judge the efficacy of the treatment. Clearly the strongest literature included those articles in which randomized trials compared the accuracy of diagnosis. Several of those articles are cited in the reference section of the original guideline.
- This guideline does not address all possible conditions associated with acute knee injury, only those that account for the majority of initial visits to a physician.

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)

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ADAPTATION

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

DATE RELEASED

2001

GUIDELINE DEVELOPER(S)

American Academy of Family Physicians - Medical Specialty Society
American Academy of Orthopaedic Surgeons - Medical Specialty Society

GUIDELINE DEVELOPER COMMENT

The guideline was developed by a multi-professional panel led by the American Academy of Orthopaedic Surgeons (AAOS) Guidelines Committee with the AAOS Knee Injury Evidence Analysis Work Group, the American College of Emergency Physicians, and the American Academy of Family Physicians.

SOURCE(S) OF FUNDING

American Academy of Orthopaedic Surgeons (AAOS)

GUIDELINE COMMITTEE

American Academy of Orthopaedic Surgeons (AAOS) Guidelines Committee

AAOS Knee Injury Evidence Analysis Work Group

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Panel Members: Charles Bush-Joseph, MD, Chairman, James Ferrari, MD, Robert Schenck, MD, James Williams, MD, Marc Galloway, MD, William Knopp, MD, Francis Fesmire, MD

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline.

An update is not in progress at this time.

The guideline will be reviewed every five years.

GUIDELINE AVAILABILITY

Electronic copies: Available from the [American Academy of Orthopaedic Surgeons Web site](#).

Print copies: Available from the American Academy of Orthopaedic Surgeons, 6300 North River Road, Rosemont, IL 60018-4262. Telephone: (800) 626-6726 (800 346-AAOS); Fax: (847) 823-8125; Web site: www.aaos.org.

AVAILABILITY OF COMPANION DOCUMENTS

The following is available:

- Universe of adult patients with knee injury -- Phase I. Rosemont (IL): American Academy of Orthopaedic Surgeons; 2002. 1 p.

Electronic copies: Available in Portable Document Format (PDF) from the [American Academy of Orthopaedic Surgeons Web site](#).

Print copies: Available from the American Academy of Orthopaedic Surgeons, 6300 North River Road, Rosemont, IL 60018-4262. Telephone: (847) 823-7186; (800) 346-AAOS. Fax: (847) 823-8125. Web site: www.aaos.org.

PATIENT RESOURCES

None available

NGC STATUS

This NGC summary was completed by ECRI on February 20, 2002. The information was verified by the guideline developer as of February 26, 2002.

COPYRIGHT STATEMENT

This NGC summary is based on the original guideline, which is subject to the guideline developer's copyright restrictions. For more information, please contact Belinda Duszynski, AAOS Department of Research and Scientific Affairs, 6300

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