Complete Summary

GUIDELINE TITLE

Ankle & foot (acute & chronic).

BIBLIOGRAPHIC SOURCE(S)

Work Loss Data Institute. Ankle & foot (acute & chronic). Corpus Christi (TX): Work Loss Data Institute; 2007 Jul 3. 146 p. [182 references]

GUIDELINE STATUS

Note: This guideline has been updated. The National Guideline Clearinghouse (NGC) is working to update this summary.

** REGULATORY ALERT **

FDA WARNING/REGULATORY ALERT

Note from the National Guideline Clearinghouse: This guideline references a drug(s) for which important revised regulatory information has been released.

- June 15, 2005, Non-Steroidal Anti-Inflammatory Drugs (NSAIDs): U.S. Food and Drug Administration (FDA) recommended proposed labeling for both the prescription and over the counter (OTC) NSAIDs and a medication guide for the entire class of prescription products.
- April 7, 2005, Non-steroidal anti-inflammatory drugs (NSAIDS) (prescription and OTC, including ibuprofen and naproxen): FDA asked manufacturers of prescription and non-prescription (OTC) non-steroidal anti-inflammatory drugs (NSAIDs) to revise their labeling to include more specific information about potential gastrointestinal (GI) and cardiovascular (CV) risks.

COMPLETE SUMMARY CONTENT

IDENTIFYING INFORMATION AND AVAILABILITY
DISCLAIMER

SCOPE

DISEASE/CONDITION(S)

Work-related ankle and foot disorders

GUIDELINE CATEGORY

Diagnosis
Evaluation
Management
Treatment

CLINICAL SPECIALTY

Emergency Medicine
Family Practice
Internal Medicine
Orthopedic Surgery
Podiatry

INTENDED USERS

Advanced Practice Nurses
Health Care Providers
Health Plans
Nurses
Physician Assistants
Physicians

GUIDELINE OBJECTIVE(S)

To offer evidence-based step-by-step decision protocols for the assessment and treatment of workers' compensation conditions

TARGET POPULATION

Workers with occupational disorders of the ankle and foot

INTERVENTIONS AND PRACTICES CONSIDERED

The following interventions/procedures were considered and recommended as indicated in the original guideline document:

1. Achilles tendon ruptures (treatment)
2. Ankle support (lace-up and semi-rigid)
3. Anterior drawer test

4. Anti-inflammatory medications (NSAIDS) and acetaminophen
5. Bed rest (Not recommended beyond 24 hours)
6. Bone-growth stimulators (as an option for non-union of long bone fractures)
7. Bone scan imaging (*for specific indications* see original guideline document)
8. Bracing (immobilization) for clearly unstable joint
9. Cast (immobilization) for clearly unstable joint
10. Causality (determination)
11. Cold packs/ice packs
12. Diagnostic ultrasound
13. Early mobilization, functional treatment, and partial weight bearing as tolerated
14. Exercise
15. Low energy extracorporeal shock wave therapy (see original guideline document)
16. Functional treatment
17. Fusion (for specific indications see the original guideline document)
18. Imaging/radiography including:
    - Plain films
    - Bone scans
    - Computed tomography (CT)
19. Inversion stress test
20. Magnetic resonance imaging (MRI) (for specific indications see the original guideline document)
21. Manual wheelchair
22. Mechanical treatment (taping, orthosis)
23. Night splints (dorsiflexion and tension night splint)
24. Osteotomy for hallux valgus
25. Ottawa Ankle Rules (OAR)
26. Patient education
27. Physical therapy
28. Plantar fascia stretch
29. Rest, ice, compression, & elevation (RICE)
30. Return to work
31. Stretching (flexibility)
32. Surgery for:
    - Achilles tendon ruptures
    - Ankle sprains
    - Calcaneal fractures
    - Hallux valgus
    - Lateral ligament ankle reconstruction
    - Tarsal tunnel syndrome (after conservative treatment for at least one month)
33. Tai Chi
34. Taping
35. Therapeutic exercise
36. Thompson test (on patients with suspected injury of the Achilles tendon)
37. Work restrictions/modifications

The following interventions/procedures are under study and are not specifically recommended:

1. Autologous conditioned serum (ACS)

2. Corticosteroids (topical)
3. Elastic bandage (immobilization)
4. Heat therapy (ice/heat)
5. Heel pads
6. Lineal tomography
7. Orthotic devices
8. Steroids (injection)

The following interventions/procedures were considered but are not currently recommended:

1. Accommodative modalities
2. Actovegin
3. Acupuncture
4. Arthroplasty (total ankle replacement)
5. Biofeedback
6. Continuous-flow cryotherapy
7. Diathermy
8. Electron generating device
9. Extracorporeal shock wave therapy (high energy)
10. Heparin
11. Ingrown toenail surgery
12. Insoles with magnetic foil
13. Iontophoresis
14. Laser therapy
15. Magnets
16. Manipulation/chiropractic
17. Massage
18. Narcotics
19. Phonophoresis
20. Power mobility devices (PMDs)
21. Prolotherapy/sclerotherapy
22. Surgery for charcot arthropathy
23. Surgery for plantar fasciitis except in severe cases
24. Transcutaneous electrical neurostimulation (TENS)
25. Therapeutic ultrasound

MAJOR OUTCOMES CONSIDERED

- Sensitivity and specificity of diagnostic tests
- Effectiveness of treatment (e.g., in relieving pain, swelling, and tenderness and improving joint stability)

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Hand-searches of Published Literature (Primary Sources)
Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Work Loss Data Institute (WLDI) conducted a comprehensive medical literature review (now ongoing) with preference given to high quality systematic reviews, meta-analyses, and clinical trials published since 1993, plus existing nationally recognized treatment guidelines from the leading specialty societies. WLDI primarily searched MEDLINE and the Cochrane Library. In addition, WLDI also reviewed other relevant treatment guidelines, including those in the National Guideline Clearinghouse, as well as state guidelines and proprietary guidelines maintained in the WLDI guideline library. These guidelines were also used to suggest references or search terms that may otherwise have been missed. In addition, WLDI also searched other databases, including MD Consult, eMedicine, CINAHL, and conference proceedings in occupational health (i.e. American College of Occupational and Environmental medicine [ACOEM]) and disability evaluation (i.e. American Academy of Disability Evaluating Physicians [AADEP], American Board of Independent Medical Examiners [ABIME]). Search terms and questions were diagnosis, treatment, symptom, sign, and/or body-part driven, generated based on new or previously indexed existing evidence, treatment parameters and experience.

In searching the medical literature, answers to the following questions were sought: (1) If the diagnostic criteria for a given condition have changed since 1993, what are the new diagnostic criteria? (2) What occupational exposures or activities are associated causally with the condition? (3) What are the most effective methods and approaches for the early identification and diagnosis of the condition? (4) What historical information, clinical examination findings or ancillary test results (such as laboratory or x-ray studies) are of value in determining whether a condition was caused by the patient's employment? (5) What are the most effective methods and approaches for treating the condition? (6) What are the specific indications, if any, for surgery as a means of treating the condition? (7) What are the relative benefits and harms of the various surgical and non-surgical interventions that may be used to treat the condition? (8) What is the relationship, if any, between a patient's age, gender, socioeconomic status and/or racial or ethnic grouping and specific treatment outcomes for the condition? (9) What instruments or techniques, if any, accurately assess functional limitations in an individual with the condition? (10) What is the natural history of the disorder? (11) Prior to treatment, what are the typical functional limitations for an individual with the condition? (12) Following treatment, what are the typical functional limitations for an individual with the condition? (13) Following treatment, what are the most cost-effective methods for preventing the recurrence of signs or symptoms of the condition, and how does this vary depending upon patient-specific matters such as underlying health problems?

Criteria for Selecting the Evidence

Preference was given to evidence that met the following criteria: (1) The article was written in the English language, and the article had any of the following attributes: (2) It was a systematic review of the relevant medical literature, or (3) The article reported a controlled trial – randomized or controlled, or (4) The article reports a cohort study, whether prospective or retrospective, or (5) The article reports a case control series involving at least 25 subjects, in which the assessment of outcome was determined by a person or entity independent from the persons or institution that performed the intervention the outcome of which is being assessed.

More information about the selection of evidence is available in "Appendix. ODG Treatment in Workers' Comp. Methodology description using the AGREE instrument" (see "Availability of Companion Documents" field).

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Ranking by Type of Evidence

1. Systematic Review/Meta-Analysis
2. Controlled Trial-Randomized (RCT) or Controlled
3. Cohort Study-Prospective or Retrospective
4. Case Control Series
5. Unstructured Review
6. Nationally Recognized Treatment Guideline (from www.guideline.gov)
7. State Treatment Guideline
8. Other Treatment Guideline
9. Textbook
10. Conference Proceedings/Presentation Slides

Ranking by Quality within Type of Evidence

a. High Quality
b. Medium Quality
c. Low Quality

METHODS USED TO ANALYZE THE EVIDENCE

Review of Published Meta-Analyses
Systematic Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

The Work Loss Data Institute (WLDI) reviewed each article that was relevant to answering the question at issue, with priority given to those that met the following criteria: (1) The article was written in the English language, and the article had any of the following attributes: (2) It was a systematic review of the relevant medical literature, or (3) The article reported a controlled trial – randomized or controlled, or (4) The article reported a cohort study, whether prospective or retrospective, or (5) The article reported a case control series involving at least 25 subjects, in which the assessment of outcome was determined by a person or entity independent from the persons or institution that performed the intervention the outcome of which is being assessed.

Especially when articles on a specific topic that met the above criteria were limited in number and quality, WLDI also reviewed other articles that did not meet the above criteria, but all evidence was ranked using the methodology described above, (see the Rating Scheme of the Strength of Evidence field) so that the quality of evidence could be clearly determined when making decisions about what to recommend in the Guidelines. Articles with a Ranking by Type of Evidence of Case Reports and Case Series were not used in the evidence base for the Guidelines. These articles were not included because of their low quality (i.e., they tend to be anecdotal descriptions of what happened with no attempt to control for variables that might effect outcome). Not all the evidence provided by WLDI was eventually listed in the bibliography of the published Guidelines. Only the higher quality references were listed. The criteria for inclusion was a final ranking of 1a to 4b (the original inclusion criteria suggested the methodology subgroup), or if the Ranking by Type of Evidence was 5 to 10, the quality ranking should be an "a."

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Not stated

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

The guideline developers reviewed published cost analysis.

METHOD OF GUIDELINE VALIDATION

External Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Prior to publication, select organizations and individuals making up a cross-section of medical specialties and typical end-users externally reviewed the guideline.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Note: This guideline has been updated. The National Guideline Clearinghouse (NGC) is working to update this summary. The recommendations that follow are based on the previous version of the guideline.

Initial Evaluation and Presumptive Diagnosis of Ankle Injuries

The injury should be classified into a presumptive diagnosis, which will dictate the path of care. After a complete, definitive evaluation is finished, the injury may, in some cases, need to be reclassified. Subsequent to a thorough evaluation, the

diagnosis may change (e.g., if the physician classifies a patient with a sprain and the x-rays subsequently show a fracture).

Initial Evaluation

1. Ascertain the type of trauma (inversion/eversion or dorsiflexion/plantar flexion).
2. Determine whether the problem is acute, subacute, chronic, or of insidious onset.
3. Determine the severity and specific anatomic location of the pain.
4. Assess the ability of the patient to bear weight, from no to full weight-bearing ability.
5. Search for any evidence of an open or penetrating wound.
6. Search for any evidence of deformity (anterior/posterior or lateral/medial).
7. Test the range-of-motion of the joint.
8. Document any present medication.
9. Document any history of systemic disease or previous ankle injury or disability.

Presumptive Diagnosis (See the original guideline document for International Classification of Diseases, Ninth Revision [ICD-9] codes)

- Fracture or dislocation
- Sprain, sprain-fracture, or contusion
- Laceration
- Achilles tendonitis
- Other diagnoses
    - Plantar fasciitis
    - Calcaneal spur
    - Hallux valgus
    - Tarsal tunnel syndrome
    - Traumatic arthritis, acute episode
    - Systemic disease (e.g., gout, rheumatoid arthritis (RA), psoriasis

Fracture or Dislocation

A. **Definitive Evaluation**
    - Record a history of the cause of the injury.
    - Search for any evidence of an open wound in the vicinity of the fracture.
    - Perform a clinical examination for deformity, tenderness, or ecchymosis or associated nerve, neurovascular, or tendon injury.
    - Evaluate for evidence of joint instability.
    - Search for any evidence of dislocation or arterial vascular compromise (cold, dusky foot with loss of sensation), pulse, and possibly sensation. If found, an immediate reduction should take place (prior to x-rays if necessary).
    - Perform an evaluation for an associated injury of the foot.
    - X-ray the ankle (two views). Special views such as mortise should be obtained when necessary (Refer to the Ottawa Ankle Rules in the original guideline document [Stiell et al., 1994]).
    - For detailed imaging criteria, see (in the original guideline document)

- Indications for imaging -- Plain films (Radiography, anterior-posterior [AP], lateral, etc.)
- Indications for imaging -- MRI (Magnetic resonance imaging)
- Indications for imaging -- Bone Scan (Radioisotope Bone Scanning)
- Indications for imaging -- Ultrasound

B. **Initial Therapy**

- Simple, undisplaced stable fractures with no component of the fracture at the level of the ankle mortise (the gliding joint between the distal ends of the tibia and fibula and the proximal end of the talus) can be treated by the primary care physician.
    - A trilateral splint should be applied initially for two to three weeks. The patient will need crutches and should avoid weight bearing. Swelling is controlled with constant elevation above the heart.
    - Ice and elevation for 24–48 hours is appropriate.
    - Post-fracture, two to three weeks (after the swelling has subsided), it is appropriate to apply a fiberglass cast with the foot at 90 degrees. This allows the addition of a shoe for conversion to a walking cast one to three weeks after the cast has been applied. When casting, consider checking for vasomotor and sensory compromise. Weight-bearing is progressed to 50% with crutches until six weeks post-injury, when full weight-bearing is allowed and crutches are discontinued.
    - Analgesics for up to two weeks are appropriate, but in treating fractures, nonsteroidal anti-inflammatory drugs (NSAIDS) may be associated with side effects that are deleterious to treatment outcome, including delayed bone healing. Pain is usually due to swelling and is best controlled with elevation of the ankle and foot. An initial intramuscular (IM) pain injection is often indicated.
    - The patient should be rechecked seven to ten days after the fracture, seven to ten days after beginning partial weight-bearing, and after progressing to full weight-bearing.
    - X-rays are repeated during the above visits and after the cast is removed at six weeks.
    - Physical therapy (one to five visits) to teach patient range-of-motion and muscle-strengthening exercises may be needed after cast removal.
    - If using a removable cast, starting at four weeks the patient should be allowed to begin gentle range-of-motion exercises with the cast off.
    - Prescribe level of activity at work and job modifications at each visit.
- Nondisplaced, bimalleolar fractures should be referred to an orthopedic surgeon, as they are potentially unstable.
- All other ankle fractures should be referred to an orthopedic surgeon. Compound fractures, when appropriate, should have a tetanus toxoid injection before being referred to an orthopedic surgeon.

C. **Secondary Evaluation for Patients with Persistent Symptoms or Minimal Improvement after Six Weeks of Therapy**

- Review for compliance of the employee and employer to therapy programs and job modifications and restrictions. Also review for insurance company cooperation.
- Evaluate for delayed union, malalignment, or signs of associated tendon or nerve injury or signs of reflex sympathetic dystrophy (complex regional pain syndrome [CRPS 1]).
- Promptly refer to an orthopedic surgeon if one of these conditions is found; otherwise continue therapy.
- Refer to specialist needs to be considered before six weeks for conditions like compartment syndrome.

Official Disability Guidelines (ODG) Return-To-Work Pathways

Closed reduction, sedentary/modified work: 1–7 days

Closed reduction, standing work without cast: 42 days

Open reduction, internal fixation, sedentary/modified work: 14 days

Open reduction, internal fixation, standing work without cast: 84 days

Comorbidity fracture blister, add: 21 days

(See *ODG Capabilities & Activity Modifications for Restricted Work* under "Work" in the Procedure Summary of the original guideline document)

D. **Other Considerations**

- Posterior fracture dislocation of the ankle is a serious injury and is frequently associated with neurovascular compression and with a cyanotic, cold foot. It is sometimes prudent to immediately reduce the dislocation, even prior to obtaining x-rays. "Pure" dislocations of the ankle are rare.
- Trimalleolar fractures and Pott's fractures (fractures of the distal fibula with torn deltoid ligament) are more commonly associated with this injury.
- An open wound in the vicinity of a fracture makes it a compound fracture, even if no clear connection to the fracture site is apparent. All compound fractures should be referred to an orthopedic surgeon immediately for care.
- Neurovascular injuries are a consideration in any fracture, particularly in the ankle, knee, wrist, and elbow. In the ankle, the common injured structures include the posterior tibial artery (which wraps around the posterior-inferior border of the medial malleolus) and the sural nerve (distal to the lateral malleolus). Therefore, it is important to evaluate the foot distal to the fracture to determine if there is evidence of nerve or vascular damage. The sural nerve is sensory and supplies the lateral foot. Vascular injury is detected by cyanosis and coldness of the foot. Since pulses are often difficult to palpate in a swollen ankle, a Doppler examination should be employed if a pulse is not felt. Vascular

competence is further checked by comparing the circulatory return of a blanched nailbed to the contralateral side.

- Compartment syndrome (CS) is a limb-threatening and life-threatening condition observed when perfusion pressure falls below tissue pressure in a closed anatomic space. The current body of knowledge unequivocally reflects that untreated CS leads to tissue necrosis, permanent functional impairment, and, if severe, renal failure and death. Need referral to ortho/trauma surgeon to check pressures and consider fasciotomy.
- The standard anteroposterior and lateral ankle x-ray occasionally needs to be enhanced by special views. For example, a mortise view detects small but significant widening of the ankle mortise that requires surgical repair for torn ligaments.
- Undisplaced ankle fractures, except those having a component of the fracture at the level of the ankle mortise, can be treated by the primary care physician. If the fracture line of the tibia or fibula is adjacent to the level of the mortise, it is prudent to refer the patient to an orthopedic surgeon. Although these fractures may initially appear stable, they are unstable and prone to displace within a few days. Generally, they are treated surgically.
- A trilateral splint is used for the initial splinting of stable fractures of the ankle until the swelling subsides. The splint is then replaced by one of several types of casts (below the knee nonweight-bearing cast, walking cast, or removable cast boot). The splint is applied in the following manner: With the patient in the prone position, the knee flexed to 90 degree angle, with an assistant or family member supporting the ankle in the neutral position by the great toe, a four-inch Webril or case padding is wrapped from the base of the toes to the tibial tubercle. Next, five layers of 5 x 30 inch plaster are applied, starting at the back of the upper calf and passing over the heel to the base of the toes, doubling back and are smoothed. Then five layers of a 5 x 30 inch plaster are applied laterally, beginning high on the calf, passing over the lateral malleolus, under the plantar aspect of the foot, and up the medial side as far as possible. This is held in place by an Ace or Coban bandage. A Coban bandage has less give than an Ace bandage and should be applied with just one overlapping layer to avoid excess compression.
- See Criteria for Fusion (ankle, tarsal, metatarsal) in the original guideline document to treat non- or malunion of a fracture, or traumatic arthritis secondary to on-the-job injury to the affected joint.

Sprain, Sprain-fracture, or Contusion

ODG Return-To-Work Pathways

Ankle strapping/soft cast, mild sprain (Grade I)*: 1 day

Ankle strapping/soft cast, severe sprain (Grade II-III)*, sedentary/modified work (10 days crutches): 4–5 days

Ankle strapping/soft cast, severe sprain, manual/standing work: 21 days

Achilles tendon repair, sedentary/modified work: 10 days

Achilles tendon repair, manual/standing work, without cast: 49–63 days

***Definition of Sprain/Strain Severity Grade**: In general, a **Grade I** or mild sprain/strain is caused by overstretching or slight tearing of the ligament/muscle/tendon with no instability, and a person with a mild sprain usually experiences minimal pain, swelling, and little or no loss of functional ability. Although the injured muscle is tender and painful, it has normal strength. A **Grade II** sprain/strain is caused by incomplete tearing of the ligament/muscle/tendon and is characterized by bruising, moderate pain, and swelling, and a **Grade III** sprain/strain means complete tear or rupture of a ligament/muscle/tendon. A sprain is a stretch and/or tear of a ligament (a band of fibrous tissue that connects two or more bones at a joint). A strain is an injury to either a muscle or a tendon (fibrous cords of tissue that connect muscle to bone). (Hannafin, Kitaoka & Panagis, 2004).

- A definitive evaluation of a sprain is important, as sprains are the most common injury of the ankle, and inversion sprains make up the majority. Eversion sprains may be more severe due to their association with syndesmosis injuries. One classification of sprains is Grades I, II, and III* (least serious to most serious), and it is helpful to classify sprains in this manner as a guide to the initial therapy and prognosis. (Ankle sprains can range from stretching [grade 1] to partial rupture [grade 2] to complete rupture of the ligament [grade 3] [Litt, 1992]). Evaluations for a sprained ankle include: check for the area of maximal tenderness; on the lateral side examine the anterior talofibular ligament, the calcaneofibular ligament, and posterial talofibular ligament; check the syndesmosis area; examine the mid-tarsal joint; check for injuries to the posterior tibial and peroneal tendons; examine for possible fracture of the base of the fifth metatarsal, anterior process of the calcaneus, osteochondral lesion of the talus, lateral process of the talus; and check for tenderness of the medial and lateral malleoli.
- A sprain-fracture refers to the small flakes of bone avulsed from the calcaneus or talus in sprains of the ankle. These flakes represent small avulsions of bone attached to the injured calcaneofibular ligament or the talofibular ligament. Sprain-fractures are treated in the same manner as the grade of sprain they represent and can be treated by the primary care physician unless they are clinically a Grade III.*
- Peroneal tendon injuries are associated with Grades II and III ankle sprains of the inversion type. Peroneal tendons (longus and brevis) traverse distal to the lateral malleolus, and their retaining retinacula are sometimes torn with sprains of the ankle. Examination includes dorsiflexion/eversion of the foot and having the patient resist passive inversion. This forces the injured tendon to ride up over the lateral malleolus. Treatment is a short leg cast with ankle in 30 degree plantar flexion for six weeks.
- Traction injuries to the peroneal and sural nerves can occur with sprains of the ankle. They are detected by careful palpation of the nerves for tenderness. The sural nerve runs posterior and distal to the lateral malleolus. Injury to these nerves may occasionally lead to reflex sympathetic dystrophy. The Ottawa rules, developed by Stiell et al., identify those cases of ankle sprain that need x-rays. Fractures commonly associated with ankle sprains include the following:
    - Talus (lateral process) fracture
    - Osteochondral fractures of the dome of the talus (may require magnetic resonance imaging [MRI] or bone scan of the tibial-talar joint for diagnosis)
    - Calcaneus-anterior process fractures

    - Fracture of base or shaft of fifth metatarsal
- Stress x-rays may be indicated in acute sprains, but they are more commonly used in unstable chronic sprains to delineate the degree of ligamentous laxity present. Stress x-rays are usually performed by a radiologist or an orthopedic surgeon.
- Syndesmosis refers to joints, such as the tibiofibular joint, held by ligaments without articular surfaces. The syndesmosis of the ankle is the tibiofibular ligament between the distal fibula and the tibia. Disruption of the tibiofibular ligament will demonstrate tenderness over that area and can be detected by a positive "squeeze test" and a special x-ray view of the ankle with the tibia held firmly and the foot rotated externally (which may show widening of the ankle mortise). This injury is often a surgical problem and should be referred to an orthopedic surgeon for treatment.
- The squeeze test is accomplished by grasping the tibia in the palm of one hand and the fibula in the other and squeezing them together in the lower third. Pain in the area just above the ankle mortise on the lateral side is a sign of syndesmosis injuries.
- The anterior drawer test is for abnormal anterior/posterior motion of the ankle following a sprain. It is performed by firmly applying pressure on the anterior distal tibia and grasping the os calcis posteriorly and pulling anteriorly. Excess motion when compared with the contralateral side is judged a positive test or positive "anterior drawer sign."
- Inversion instability is tested by holding the distal end of the tibia and fibula firmly. The calcaneus is grasped with the other hand into maximum inversion and eversion. Comparison is made with the contralateral side. See "Inversion stress test" in the original guideline document.
- Sprains that are not responding to therapy are often an indication to x-ray or repeat x-ray to check for fractures not previously detected, such as osteochondral fractures of the talus.
- Approximately 10 to 20% of all sprains will either fail conservative management or will be severe enough to require orthopedic evaluation. A review of 12 studies comparing surgery with functional treatment shows that controlled movement is the treatment of choice for lateral ligament injuries of the ankle. Patients who had failed conservative therapy and delayed surgical repair had as good results from the surgery as patients who had primary surgery. Possible contraindications to nonsurgical management of ankle sprains that require orthopedic referral include the following:
    - Associated displaced osteochondral fracture
    - Displaced anterior tibial lip fracture
    - Chronic instability
    - Combined medial and lateral ligamentous injuries

Laceration

ODG Return-To-Work Pathways

Minor: 0 days

Major, clerical/modified work: 3 days

Major, manual work: 8 days

Major, heavy manual work: 14 days

Tendon repair, clerical/modified work: 14 days

Tendon repair, manual work: 91 days

- A laceration produced by crush injury needs an x-ray to rule out any underlying fracture and to answer any question of penetration of the joint or a foreign body in the wound.
- Neurovascular and tendon function need evaluation with any laceration around a joint. No anesthesia should be used in the wound until the sensation has been checked distal to the laceration and the function of the tendons has been identified as intact.
- Antibiotic therapy for contaminated lacerations should include both anti-staphylococcal and broad-spectrum coverage.
- Need to check for foreign body, clean/irrigate wound, evaluate tetanus risk, and provide instruction on suture care/schedule for removal, as needed.

Achilles Tendonitis

ODG Return-To-Work Pathways

Without surgery, clerical/modified work: 0 days

Without surgery, manual/standing work: 5–7 days

With surgery, clerical/modified work: 7–10 days

With surgery, manual/standing work: 42–49 days

- The Thompson test (also called the Thomas test) is used to diagnose Achilles tendon rupture. Squeeze the calf with the patient in a prone position and with the foot off the examining table. With an intact tendon, the foot will plantar flex. This is a very accurate test.
- Laboratory studies are usually not necessary. However, with persistent symptoms, an arthritis panel and a serum uric acid test may be necessary.
- Achilles tendonitis requires initial therapy of an Achilles stretching program. The latter can be implemented by a single visit to a physical therapist or may be taught by the physician. Additionally, a heel lift in the shoe may be of value. Short-term immobilization and even non-weight-bearing are also commonly needed. Because there is an association with late rupture of the tendon, most physicians suggest it is inappropriate to inject steroids into the bursa or the tendon sheath.
- An x-ray of the ankle is appropriate to rule out other pathology including bone pathology in the presence of persistent tendonitis with little improvement. Noncompliance by the patient with the stretching program is frequently implicated with slow improvement of symptoms.
- Achilles tendonitis patients who have no improvement after 30 days of therapy need an orthopedic consultation to assist in defining appropriate therapy and to rule out complicating factors.

- Patient noncompliance is the cause of failure to improve in up to 90% of cases. The majority of the remaining cases are related to unrecognized associated pathology such as osteochondral fractures in ankle injuries.

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

REFERENCES SUPPORTING THE RECOMMENDATIONS

References open in a new window

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

During the comprehensive medical literature review, preference was given to high quality systematic reviews, meta-analyses, and clinical trials over the past ten years, plus existing nationally recognized treatment guidelines from the leading specialty societies.

The heart of each Work Loss Data Institute guideline is the Procedure Summary (see the original guideline document), which provides a concise synopsis of effectiveness, if any, of each treatment method based on existing medical evidence. Each summary and subsequent recommendation is hyper-linked into the studies on which they are based, in abstract form, which have been ranked, highlighted, and indexed.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

These guidelines unite evidence-based protocols for medical treatment with normative expectations for disability duration. They also bridge the interests of the many professional groups involved in diagnosing and treating disorders of the ankle and foot.

POTENTIAL HARMS

- Open operative treatment of acute Achilles tendon ruptures compared with non-operative treatment is associated with a lower risk of rerupture, but a higher risk of other complications including infection, adhesions and disturbed skin sensibility
- Non-steroidal anti-inflammatory drugs (NSAIDs) may be associated with side effects that are deleterious to treatment outcome, including delayed bone healing.

CONTRAINDICATIONS

CONTRAINDICATIONS

- Possible contraindications to nonsurgical management of ankle sprains that require orthopedic referral include the following:
    - Associated displaced osteochondral fracture
    - Displaced anterior tibial lip fracture
    - Chronic instability
    - Combined medial and lateral ligamentous injuries
- Extracorporeal shock wave therapy (ESWT) is contraindicated in pregnant women; patients younger than 18 years of age; patients with blood clotting diseases, infections, tumors, cervical compression, arthritis of the spine or arm, or nerve damage; patients with cardiac pacemakers; patients who had physical or occupational therapy within the past 4 weeks; patients who received a local steroid injection within the past 6 weeks; patients with bilateral pain; patients who had previous surgery for the condition.

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

The Treatment Planning sections outline the most common pathways to recovery, but there is no single approach that is right for every patient and these protocols do not mention every treatment that may be recommended. See the Procedure Summaries (in the original guideline document) for complete lists of the various options that may be available, along with links to the medical evidence.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

IMPLEMENTATION TOOLS

Patient Resources

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

Getting Better
Living with Illness

IOM DOMAIN

Effectiveness
Patient-centeredness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Work Loss Data Institute. Ankle & foot (acute & chronic). Corpus Christi (TX): Work Loss Data Institute; 2007 Jul 3. 146 p. [182 references]

ADAPTATION

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

DATE RELEASED

2003 (revised 2007 Jul 3)

GUIDELINE DEVELOPER(S)

Work Loss Data Institute - Public For Profit Organization

SOURCE(S) OF FUNDING

Not stated

GUIDELINE COMMITTEE

Not stated

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Editor-in-Chief, Philip L. Denniston, Jr. and Senior Medical Editor, Charles W. Kennedy, MD, together pilot the group of approximately 80 members. See the ODG *Treatment in Workers Comp* Editorial Advisory Board.

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

There are no conflicts of interest among the guideline development group members.

GUIDELINE STATUS

Note: This guideline has been updated. The National Guideline Clearinghouse (NGC) is working to update this summary.

GUIDELINE AVAILABILITY

Electronic copies of the updated guideline: Available to subscribers from the Work Loss Data Institute Web site.

Print copies: Available from the Work Loss Data Institute, 169 Saxony Road, Suite 210, Encinitas, CA 92024; Phone: 800-488-5548, 760-753-9992, Fax: 760-753-9995; www.worklossdata.com.

AVAILABILITY OF COMPANION DOCUMENTS

The following are available:

- Background information on the development of the Official Disability Guidelines of the Work Loss Data Institute is available from the Work Loss Data Institute Web site.
- Appendix. ODG Treatment in Workers' Comp. Methodology description using the AGREE instrument. Available to subscribers from the Work Loss Data Institute Web site.

PATIENT RESOURCES

The following is available:

- Appendix B. ODG Treatment in Workers' Comp. Patient information resources. 2006.

Electronic copies: Available to subscribers from the Work Loss Data Institute Web site.

Print copies: Available from the Work Loss Data Institute, 169 Saxony Road, Suite 210, Encinitas, CA 92024; Phone: 800-488-5548, 760-753-9992, Fax: 760-753-9995; www.worklossdata.com.

Please note: This patient information is intended to provide health professionals with information to share with their patients to help them better understand their health and their diagnosed disorders. By providing access to this patient information, it is not the intention of NGC to provide specific medical advice for particular patients. Rather we urge patients and their representatives to review this material and then to consult with a licensed health professional for evaluation of treatment options suitable for them as well as for diagnosis and answers to their personal medical questions. This patient information has been derived and prepared from a guideline for health care professionals included on NGC by the authors or publishers of that original guideline. The patient information is not reviewed by NGC to establish whether or not it accurately reflects the original guideline's content.

NGC STATUS

This summary was completed by ECRI on February 2, 2004. The information was verified by the guideline developer on February 13, 2004. This NGC summary was updated by ECRI on March 24, 2005, January 3, 2006, April 10, 2006, November 8, 2006, March 27, 2007, and August 15, 2007.

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