

Sample Topic

Osteoarthritis



The Medical Disability Advisor: Workplace Guidelines for Disability Duration

Fifth Edition

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Editor-in-Chief

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Osteoarthritis

Related Terms

- Arthrosis
- Atrophic Arthritis
- Degenerative Joint Disease
- Hypertrophic Arthritis
- Osteoarthrosis

Medical Codes

- **ICD-9-CM:** 715, 715.0, 715.00, 715.1, 715.10, 715.11, 715.12, 715.13, 715.14, 715.15, 715.16, 715.17, 715.18, 715.19, 715.2, 715.20, 715.21, 715.22, 715.23, 715.24, 715.25, 715.26, 715.27, 715.28, 715.29, 715.3, 715.30, 715.31, 715.32, 715.33, 715.34, 715.35, 715.36, 715.37, 715.38, 715.39, 715.8, 715.9
- **ICD-10:** M15.0, M15.1, M15.2, M15.3, M15.4, M15.8, M15.9, M16.0, M16.1, M16.2, M16.3, M16.4, M16.5, M16.6, M16.7, M16.9, M17.0, M17.1, M17.2, M17.3, M17.4, M17.5, M17.9, M18.0, M18.1, M18.2, M18.3, M18.4, M18.5, M18.9, M19.0, M19.1, M19.2, M19.8, M19.9, M24.7

Definition

Osteoarthritis is the most common joint disorder. Loss of cartilage and overgrowth of bone within the affected joint can lead to pain and joint deformity. The disease may affect one or more joints and is a primary cause of disability among adults.

Osteoarthritis usually begins with painless changes in components of the joint cartilage such as collagen and the substances that provide the cartilage's resilience (proteoglycans). As the cartilage starts to erode, particles irritate the joint lining (synovium) causing stiffness and swelling. Tiny cavities (subchondral cysts) form in the bone marrow beneath the cartilage, weakening the bone. Bone overgrowths at joint edges can produce bumps (osteophytes) causing pain and interference with normal joint function. Instead of being smooth and slippery, the cartilage eventually becomes so rough and pitted that the joint no longer moves smoothly. The bone, joint capsule, tissue lining the joint (synovial tissue), tendons, and cartilage are all eventually affected.

Primary osteoarthritis affects joints without any known cause, primarily the joints of the finger, hip, knee, big toe, and the cervical and lumbar spine. Bony lumps appear and worsen over time at the middle and end joints of the fingers, respectively called Bouchard's nodes and Heberden's nodes. The hip and knee are particularly vulnerable to osteoarthritis because of their weight-bearing function.

Secondary osteoarthritis occurs as the result of trauma to a joint. It can also be caused by a congenital joint disease, an infection, or by a neurologic, metabolic, or endocrine disease. Secondary osteoarthritis may affect any joint.

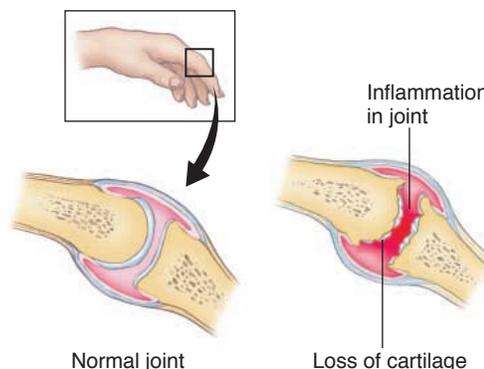
Osteoarthritis should not be confused with rheumatoid diseases, such as rheumatoid arthritis. Rheumatoid diseases are systemic

diseases that can affect the entire body, including the joints. In contrast, osteoarthritis is limited only to the joints.

Although it is the most common joint disease, little is known about what actually causes osteoarthritis. Often thought of as an inevitable part of aging, osteoarthritis is, in fact, not caused by the simple wear and tear that occurs with aging. Recent research is establishing that much of the osteoarthritis that occurs has strong genetic components. The degree of pain correlates poorly with the extent of cartilage damage.

Risk: Risk factors for developing osteoarthritis include being overweight, participation in high impact or competitive combat sports such as football, and activities that require frequent bending or carrying heavy loads. Recreational running does not contribute to degenerative joint disease. Genetics and bone density play a role in the development of osteoarthritis. Symptoms of the disease increase with age (Hellman 779). The single greatest risk factor for osteoarthritis (OA) is age; however between the ages of 40 and 70, women are more troubled with OA than men; after age 70, the rates are the same (Brandt 1264; Beers 367).

Incidence and Prevalence: By age 40, almost 9 out of 10 people will have x-ray evidence of osteoarthritis in their weight-bearing joints. Estimates suggest that at any given time, 20 million people in the US experience the effects of osteoarthritis (Hellman 779). Degenerative joint disease of the knee is the leading cause of chronic disability in this country (Brandt 1264).



Diagnosis

History: Symptoms of osteoarthritis develop gradually. In the early stages, the only complaint may be morning stiffness that resolves within 30 minutes after starting activity. As the disease progresses, joints become swollen and painful. The pain worsens with increased activity and weight bearing throughout the day, and is relieved with rest. Range of motion may be limited. Stiffness becomes more intense. Certain movements produce a grating, grinding, or catching sensation. Some joints such as the knee may become unstable due to stretching of the ligaments that surround and support the joint, and loss of cartilage within the joint. The hip loses its range of motion and becomes stiff and painful. Symptoms of osteoarthritis in the hip may sometimes be felt in the groin or the knee. Back pain is the most common symptom of osteoarthritis of the spine. When

osteoarthritis occurs in the neck or lower back, bone overgrowth can press on the nerves causing pain, numbness, and weakness in an arm or leg.

Physical exam: In the early stages, few or no signs may be seen on physical examination. As the disease progresses, deformity and contractures may develop. Joints may be slightly warm to the touch and swollen from increased synovial fluid or bone overgrowth. Nodular swellings (Heberden's or Bouchard's nodes) may be felt or seen on the fingers. Knees may bend either inward (knock knees, genu valgum) or outward (bow-legs or genu varum) or may seem flexed in a fixed state (flexion contracture). Affected joints may be tender to the touch. Active and passive range of motion may cause pain.

Tests: X-rays of the affected joint show a characteristic pattern of joint space narrowing, bony growths (spurs or osteophytes), bone cysts, and lipping at the joint surfaces. The signs visible on x-ray may not however, correlate with the individual's symptoms. e.g., the x-ray signs may be severe while the individual's symptoms are mild or even absent. X-rays do not reveal changes in the cartilage. For this, an MRI is required, but is not normally used for this diagnostic purpose.

Laboratory tests are done only to rule out another diagnosis. Erythrocyte sedimentation rate, complete blood count (CBC), and antinuclear antibody test are performed if an inflammatory process is suspected. These tests are normal or negative in osteoarthritis. Examination of joint fluid may be performed to rule out infection, gout, or rheumatoid arthritis.

Treatment

Treatment is aimed at controlling pain and inflammation while maintaining mobility. Primary treatment options include exercise and medication. The treatment plan is based on several factors and includes the extent of joint involvement, the number and sites of involved joints, the nature of the individual's pain symptoms, other health problems, the individual's age, and life-style issues such as occupation and typical everyday activities.

The goal of exercise in treating and managing osteoarthritis is to keep the cartilage healthy, maintain range of motion, and strengthen tendons and muscles to enable them to absorb stress placed on the joints. Exercises may include range of motion, strengthening (isotonic, isokinetic, and isometric), postural, and stretching exercises.

Physical therapy may also include heat treatments (warm baths, dipping the hand into hot paraffin mixed with mineral oil), massage, and traction. When the neck is affected, deep heat treatment using high-frequency current (diathermy) or ultrasound may be helpful.

Because they provide only short-term relief, drugs are the least important aspect of the total treatment plan. Pain relievers (analgesics) may be taken to reduce pain. Nonsteroidal anti-inflammatory drugs (NSAIDs) are used to reduce inflammation. In addition, local corticosteroid injection may occasionally be given to reduce inflammation. Injections of sodium hyaluronate

(viscosupplementation), a natural ingredient of joint fluid, may be given to lubricate the joint. This helps reduce pain and improve function, particularly of the knee joint. COX-2 inhibitors are a group of newer drugs that reduce pain and inflammation with fewer gastrointestinal side effects, although their cardiovascular side effects have recently been discovered and publicized. Topical analgesic creams may also be used. Muscle relaxants may be given if muscles are strained while compensating for the affected joint. While these treatments help to control the symptoms, they do not affect the progression of the disease.

With progression to severe disease, supportive devices such as canes, braces, or shoe inserts may be needed to lessen stress on the joint and assist mobility. Exercise should not be discontinued but may need to be modified during periods when supportive devices are required.

Surgical options should be considered in cases of advanced osteoarthritis or when all other treatments have failed to bring relief. Surgical cutting and realignment of bone (osteotomy) increases movement and helps redistribute weight evenly on the joint. This may be done at the knee or hip. Arthrodesis (fusion) surgically fixes the joint in a permanent position. The hip or knee joint is commonly replaced with an artificial joint (arthroplasty). Joint replacement is usually very successful in improving motion and function and dramatically decreasing the pain.

Prognosis

The outcome of osteoarthritis is unpredictable. Individuals with osteoarthritis often experience periods of time when symptoms are mild and periods when they are more severe. Although the disease typically progresses, it can stabilize, or even rarely, reverse.

Outcome generally depends on which joints are involved and the extent of joint degeneration. The disease may cause long-term pain and significantly limit activity, especially when knees, hips, or cervical spine is involved.

Differential Diagnoses

- Bursitis
- Conditions that affect bone (e.g., osteonecrosis, Paget's disease, and osteoporosis)
- Conditions that affect cartilage such as osteochondritis dissecans and osteochondromatosis
- Diseases affecting the bone such as osteoporosis or multiple myeloma
- Pigmented villonodular synovitis
- Primary or metastatic bone cancer
- Radicular spine pain
- Rheumatoid diseases (e.g., rheumatoid arthritis, ankylosing spondylitis, pseudogout, psoriatic arthritis)
- Tendinitis

Specialists

- Occupational Therapist
- Orthopedic Surgeon
- Physiatrist
- Physical Therapist
- Rheumatologist

Rehabilitation†

The focus of rehabilitation for osteoarthritis is to maintain an individual's function by controlling pain, as well as by promoting joint integrity and muscle strength.

Ice massage and cold packs are effective in pain control, while the efficacy of electric stimulation, including TENS (transcutaneous electrical nerve stimulation), is inconclusive (Jordan). Local injections provide only temporary relief for osteoarthritis (Raynauld).

The therapist will develop an exercise program to address the loss of motion and strength in the affected joint. Supervised exercises, including stretching, strengthening, and aerobic exercises are effective in both reducing pain and improving physical function among individuals suffering from knee and hip osteoarthritis (Brosseau). Knee and hip osteoarthritis respond equally to supervised group or individual exercise sessions (Suomi). The efficacy of individuals using a self-guided program including regular exercise and weight loss are helpful in improving functional limitations and pain (Jordan). When available, aquatic exercise is recommended (Foley).

Orthotics for involved body parts, such as knee braces and hand splints, may improve function and decrease pain in individuals with osteoarthritis. Orthotics may accordingly help to maintain the individual's independence and minimize energy expenditure. However, orthotics must be used in conjunction with an active exercise program for the involved body parts. Occupational therapy and/or ergonomic assessments may be beneficial for determining modifications and assistive devices that will allow for return to work and full function in daily tasks.

FREQUENCY OF REHABILITATION VISITS

| | |
|------------------------------------|---------------------------------|
| Nonsurgical | |
| Specialist | Guidelines |
| Physical or Occupational Therapist | Up to 20 visits within 10 weeks |

The table above represents a range of the usual acceptable number of visits for uncomplicated cases. It provides a framework based on the duration of tissue healing time and standard clinical practice.

Comorbid Conditions

- Conditions that precipitate secondary osteoarthritis (hemochromatosis, gout, chondrocalcinosis, intra-articular fracture)
- Obesity increases stress on weight-bearing joints (hips and knees)

Complications

A bone overgrowth (osteophyte) pressing on nerves in the cervical or lumbar vertebrae (spondylosis) can cause spinal nerve compression (radiculopathy) and dysfunction of the spinal cord (myelopathy). Compression of blood vessels (vertebral artery) supplying the back of the brain can result in vision problems,

vertigo, nausea, and vomiting. Osteophytes pressing on the esophagus can make swallowing difficult. Infection or increased inflammation of an affected joint can complicate the course and treatment plan.

It is important to note that while the disease is diagnosed by x-ray findings, the symptoms of pain, swelling, and stiffness may not correlate well with the findings. e.g., an individual's knee films may exhibit large spurs, narrow joint space, and loose bodies floating in the joint. While this would indicate a longstanding problem, the individual may have had only mild symptoms or no symptoms at all. The individual may have sought medical care only after a seemingly insignificant injury or prolonged activity aggravated the symptoms. Such scenarios can greatly complicate cases related to cause and effect settlements.

Factors Influencing Duration

Rest and exercise must be balanced. Too much rest will weaken muscles surrounding the affected joint. This places further stress on the joint and causes additional pain and instability. Repetitive activities at home or on the job that place stress on the affected joint or cause overuse of the affected joint may lengthen disability. Depression or other emotional reaction possibly triggered by pain and limitation of movement and function can make it more difficult to cope or overcome symptoms of osteoarthritis.

Length of Disability

Disability may range from days (with an acute episode of symptoms) to permanent disability, depending on the joint affected, severity and extent of the arthritis, results of treatment, and the individual's work duties. Disability may be permanent.

Medical and/or supportive treatment, osteoarthritis.

DURATION IN DAYS

| Job Classification | Minimum | Optimum | Maximum |
|--------------------|---------|---------|------------|
| Sedentary | 0 | 14 | Indefinite |
| Light | 0 | 14 | Indefinite |
| Medium | 1 | 21 | Indefinite |
| Heavy | 7 | 28 | Indefinite |
| Very Heavy | 7 | 28 | Indefinite |

Return to Work

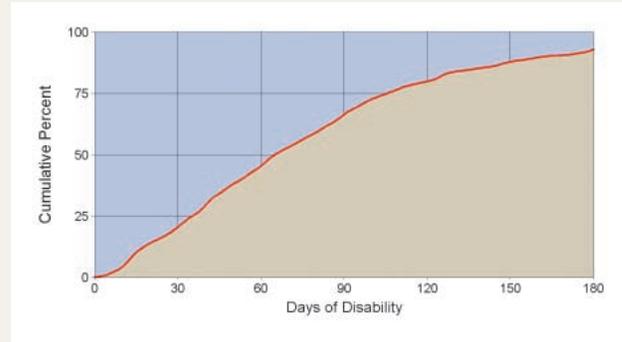
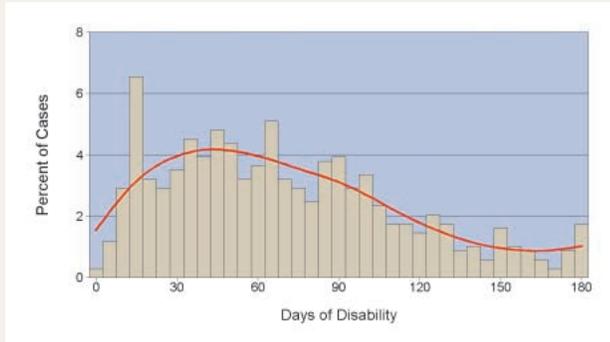
Modifications may be necessary during weight-bearing activities or where a joint is overused or repetitively stressed. When hips or lower extremities are involved, limited stair climbing, squatting, and kneeling are advised. Additional rest periods may be needed. Accommodations must be made for supportive devices such as canes, braces, stools, or wheelchairs. Use of medication to control pain and swelling will require review of safety issues and drug policies. Occupational therapy referral for work area evaluation can be beneficial.

† Researched and authored by the OIOC of New York University Medical Center. To understand the underlying methodology, please refer to "The Rehabilitation Guidelines" at the beginning of this volume.

Reference Data

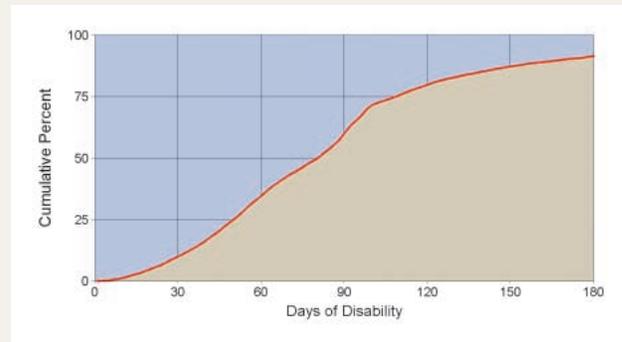
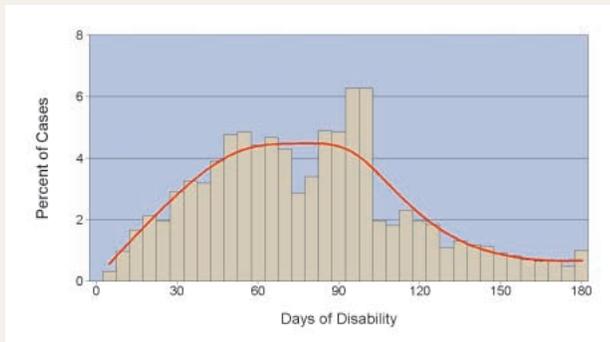
DURATION TRENDS - ICD-9-CM: 715

| Cases | Mean | Min | Max | No Lost Time | Over 6 Months | Percentile: | 5th | 25th | Median | 75th | 95th |
|-------|------|-----|-----|--------------|---------------|-------------|-----|------|--------|------|------|
| 687 | 78 | 0 | 298 | 0.3% | 7.7% | Days: | 11 | 36 | 65 | 106 | 182 |



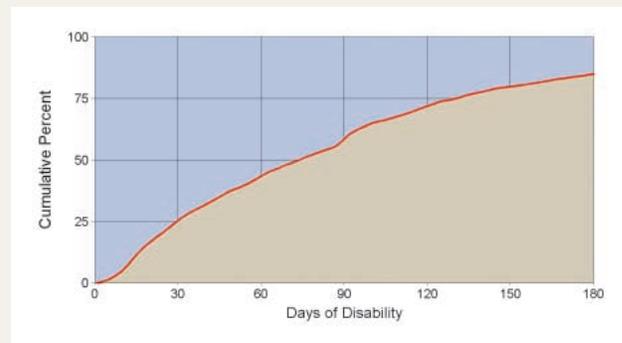
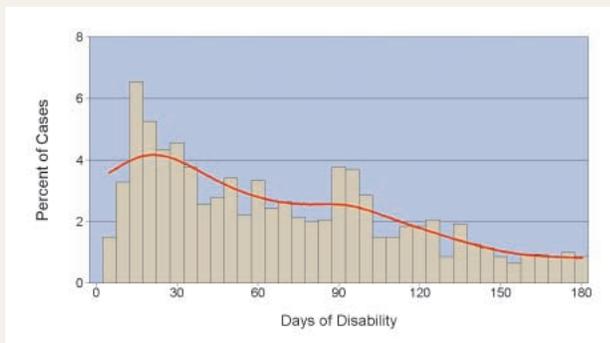
DURATION TRENDS - ICD-9-CM: 715.15, 715.16

| Cases | Mean | Min | Max | No Lost Time | Over 6 Months | Percentile: | 5th | 25th | Median | 75th | 95th |
|-------|------|-----|-----|--------------|---------------|-------------|-----|------|--------|------|------|
| 2767 | 87 | 1 | 294 | 0% | 8.8% | Days: | 20 | 50 | 81 | 109 | 188 |



DURATION TRENDS - ICD-9-CM: 715.9

| Cases | Mean | Min | Max | No Lost Time | Over 6 Months | Percentile: | 5th | 25th | Median | 75th | 95th |
|-------|------|-----|-----|--------------|---------------|-------------|-----|------|--------|------|------|
| 1407 | 96 | 1 | 475 | 0% | 15.4% | Days: | 11 | 30 | 75 | 132 | 265 |



Note: Differences may exist between the duration tables and the reference graphs. Duration tables provide expected recovery periods based on the type of work performed by the individual. The reference graphs reflect the actual experience of many individuals across the spectrum of physical conditions, in a variety of industries, and with varying levels of case management. Selected graphs combine multiple codes based on similar means and medians.

Failure to Recover

Regarding diagnosis:

- Has individual experienced progressive joint stiffness, pain and loss of motion?
- Did the physical exam reveal one or more inflamed, stiff, deformed joints?
- Was the diagnosis confirmed with diagnostic x-rays?
- Were other conditions with similar symptoms ruled out (i.e., bursitis, tendinitis, radicular spine pain, pigmented villonodular synovitis, osteochondritis dissecans, osteochondromatosis osteonecrosis, Paget's disease, osteoporotic fractures)?
- Is osteoarthritis primary or secondary? If secondary, how are underlying conditions being addressed?

Regarding treatment:

- Have pain and inflammation been effectively controlled with anti-inflammatory medications? If side effects are present, is there an alternative medication that could be prescribed?
- Has individual been instructed about maintaining an appropriate body weight and getting regular physical exercise?
- Is individual following a prescribed exercise plan that includes range of motion, strengthening, and stretching exercises?
- Would individual benefit from consultation with a physical and/or occupational therapist?
- If the conservative treatments have been ineffective, is surgical intervention warranted?
- If overweight, has individual been referred to a weight loss program?

Regarding prognosis:

- To what extent is function impaired?
- Have work and home activities been modified in order to reduce weight-bearing action and repetitive movement stress on affected joint?
- Has individual experienced any complications, such as spondylosis or infection that may impact recovery?

- Does individual feel helpless or depressed in regard to coping with the pain?
- Would individual benefit from attending a chronic pain management program?
- Would individual benefit from counseling or enrollment in a support group?

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