# Frequently Asked Questions about Arthritis

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## About arthritis

This article answers some general questions about arthritis, including how arthritis affects the body and some statistics on who gets arthritis.

## What is arthritis?

The word arthritis literally means joint inflammation ("arthr-" means joint; "-itis" means inflammation). It refers to more than 100 different diseases. These diseases usually affect the area in or around joints, such as muscles and tendons. Some of these diseases can also affect other parts of the body, including the skin and internal organs.

There are many types of arthritis. Most forms of arthritis are chronic, which means they may last a lifetime.

## Who gets arthritis?

Nearly 40 million Americans, or one in every seven people, have arthritis. It affects people of all ages, but it most often comes on as a person gets older.

## How does arthritis feel?

Arthritis usually causes stiffness, pain and fatigue. The severity varies from person to person, and even from day to day. In some people, only a few joints are affected and the impact may be small. In other people, the entire body system may be affected.

The joints of the body are the site of much of the action in arthritis. Many types of arthritis show signs of joint inflammation: swelling, stiffness, tenderness, redness or warmth. These joint symptoms may be accompanied by weight loss, fever or weakness.

When these symptoms last for more than two weeks, inflammatory arthritis, such as rheumatoid arthritis may be the cause. Joint inflammation may also be caused by infection, which can lead to septic arthritis. Degenerative joint disease (osteoarthritis) is the most common type of arthritis; joint inflammation is not a prominent feature of this condition. While normal joints can support a vast amount of use, mechanical abnormalities of a joint make it susceptible to degeneration.

It is healthy for you to keep active and move your joints. If you do not move a joint regularly, the muscles around it weaken and/or become tight. The joint can stiffen or even freeze. When you do try to move, the joint and muscles hurt because they have been still for so long.

Many things affect how your joints and muscles feel. Pain may be caused by swelling, joint damage, muscle tightness or spasm. Muscles hurt after doing exercise or activities you aren't used to; sometimes when the joint is damaged, simple activities stress the joint.

When your joints are inflamed or damaged, you need to take certain precautions as you do all your daily activities. Your doctor or therapist can teach you exercises and the correct use of heat and cold to decrease pain. You can also learn how to use your body with the least stress to your joints for less pain, easier movement and even more energy.

Arthritis can make it hard to do the movements you rely on every day for work or taking care of your family.

**Can arthritis cause numbness?**

Numbness is often a symptom of nerve involvement. For instance, numbness in the arm may be related to nerve irritation in the neck. In such a situation, turning or bending the head to the involved side may increase the symptoms. For example, a pinched nerve in the right side of the neck may cause numbness in the arm and hand when a person attempts to look back over the right shoulder. If nerve irritation becomes more severe, the arm and hand may become weak. A physical examination, X-rays, and an MRI of the neck, and electrodiagnostic tests may be useful in establishing the diagnosis.

**Why do joints make popping and cracking noises?**

Joints can make different noises--some are serious and some are not.

Some people learn how to "pop their knuckles." By pushing or pulling a joint in a certain way, an air bubble can suddenly appear in the joint with a "pop." Once the bubble is there the joint cannot be popped again until the air has been reabsorbed.

Some joints crack as the ligaments and tendons that pass over them slide past bumps on the bones. Individuals who "crack their neck" make noise in this way.

Other joints lock up intermittently--often with a loud pop--because something gets caught in between the joint surfaces. A torn cartilage in the knee or a loose piece of bone or cartilage in the joint can do this. Once a joint is stuck in this way, it may need to be wiggled around to unlock it. This may also cause a pop.

Finally, joints that are arthritic may crack and grind. These noises usually occur each time the joint is moved. This noise is due to the roughness of the joint surface due to loss of the smooth cartilage.

**Can cracking knuckles cause arthritis?**

There is no evidence that cracking one's knuckles can cause arthritis directly. However, repeated injury of a joint or repeatedly causing it to swell can injure the cartilage and potentially lead to degenerative joint disease.

## Warning signs

### What are the warning signs of arthritis?

Pain from arthritis can be ongoing or can come and go. It may occur when you're moving or after you have been still for some time. You may feel pain in one spot or in many parts of your body.

Your joints may feel stiff and be hard to move. You may find that it's hard to do daily tasks you used to do easily, such as climbing stairs or opening a jar. Pain and stiffness may be more severe during certain times of the day or after you've done certain tasks.

Some types of arthritis cause swelling, or inflammation. The skin over the joint may appear swollen and red, and feel hot to the touch. Some types of arthritis can also cause fatigue.

## Causes

### What causes arthritis?

There are more than 100 different types of arthritis. What causes most types is unknown. Because there are so many different types, there are likely to be many different causes.

Scientists are currently researching what roles three major factors play in certain types of arthritis. These include the genetic factors you inherit from your parents, what happens to you during your life and how you live. The importance of these factors varies for every type of arthritis.

## Prevention and management

### Can arthritis be prevented?

There are things you can do to reduce your risk for getting certain types of arthritis or to reduce disability if you already have arthritis.

People who are overweight have a higher frequency of arthritis. Excess weight increases your risk for developing osteoarthritis in the knees, and possibly in the hips and hands. Women are at special risk for this. In men, excess weight increases your risk for developing gout. It's important to maintain your recommended weight, especially as you get older.

What if you're already overweight? Research shows that middle-age and older women of average height who lose 11 pounds or more over 10 years cut their risk for developing knee osteoarthritis in half. To lose weight, try exercising and eating fewer calories on a healthy diet. If you're having trouble with weight control, ask your doctor or a registered dietitian for help.

Joint injuries caused by accidents or overuse increase your risk for some types of arthritis. You can also inherit certain genes that may increase your risk for some types of arthritis. More research is needed to find out how to reduce your risk from these factors.

### Can arthritis be managed?

What can you do to maintain your independence if you already have arthritis? Studies show that exercise helps reduce the pain and fatigue of many different kinds of arthritis. Exercise keeps you moving, working and doing daily activities that help you remain independent.

It's also important to control your weight if you have knee osteoarthritis. Being overweight puts you at risk for worse disease, and for getting osteoarthritis in your other knee if only one is affected now.

## Diagnosis

### How is arthritis diagnosed?

It's important to find out if you have arthritis and what type it is because treatments vary for each type. Early diagnosis and treatment are important to help slow or prevent joint damage that can occur during the first few years for several types.

Only a doctor can tell if you have arthritis and what type it is. When you see your doctor for the first time about arthritis, expect at least three things to happen. Your doctor will ask questions about your symptoms, examine you, and take some tests or X-rays.

You can help your doctor by writing down information about your symptoms before your appointment. Bring your answers when you see your doctor.

Arthritis may limit how far or how easily you can move a joint. Your doctor may move the joint that hurts or ask you to move it. This is to see how far the joint moves through its normal range of motion. Your doctor may also check for swelling, tender points, skin rashes or problems with other parts of your body.

Finally, your doctor may conduct some laboratory tests. These may include tests of your blood, muscles, urine or joint fluid. They also may include X-rays or scans of your body. The tests will depend on what type of arthritis your doctor suspects. They help confirm what type of arthritis your doctor suspects based on your medical history and physical exam and help rule out other diseases that cause similar symptoms.

## Osteoporosis Overview (http://www.osteo.org/osteo.html- National Institutes of Health)

Osteoporosis, or porous bone, is a disease characterized by low bone mass and structural deterioration of bone tissue, leading to bone fragility and an increased susceptibility to fractures of the hip, spine, and wrist. Men as well as women suffer from osteoporosis, a disease that can be prevented and treated.

*Facts and Figures*

*Osteoporosis is a major public health threat for 28 million Americans, 80% of whom are women.*

*In the U.S. today, 10 million individuals already have osteoporosis and 18 million more have low bone mass, placing them at increased risk for this disease.*

*One out of every two women and one in eight men over 50 will have an osteoporosis-related fracture in their lifetime.*

*More than 2 million American men suffer from osteoporosis, and millions more are at risk. Each year, 80,000 men suffer a hip fracture and one-third of these men die within a year.*

*Osteoporosis can strike at any age.*

*Osteoporosis is responsible for more than 1.5 million fractures annually, including 300,000 hip fractures, and approximately 700,000 vertebral fractures, 250,000 wrist fractures, and more than 300,000 fractures at other sites.*

*Estimated national direct expenditures (hospitals and nursing homes) for osteoporosis and related fractures is $14 billion each year.*

**What is Bone?** Bone is living, growing tissue. It is made mostly of collagen, a protein that provides a soft framework, and calcium phosphate, a mineral that adds strength and hardens the framework. This combination of collagen and calcium makes bone strong yet flexible to withstand stress. More than 99% of the body's calcium is contained in the bones and teeth. The remaining 1% is found in the blood.

Throughout your lifetime, old bone is removed (resorption) and new bone is added to the skeleton (formation). During childhood and teenage years, new bone is added faster than old bone is removed. As a result, bones become larger, heavier, and denser. Bone formation continues at a pace faster than resorption until peak bone mass (maximum bone density and strength) is reached around age 30. After age 30, bone resorption slowly begins to exceed bone formation. Bone loss is most rapid in the first few years after menopause but persists into the postmenopausal years. Osteoporosis develops when bone resorption occurs too quickly or if replacement occurs too slowly. Osteoporosis is more likely to develop if you did not reach optimal bone mass during your bone building years.

**Risk Factors.** Certain factors are linked to the development of osteoporosis or contribute to an individual's likelihood of developing the disease. These are called "risk factors." Many people with osteoporosis have several of these risk factors, but others who develop osteoporosis have no identified risk factors. There are some risk factors that you cannot change, and others that you can:

**Risk factors you cannot change:**

*Gender* - Your chances of developing osteoporosis are greater if you are a woman. Women have less bone tissue and lose bone more rapidly than men because of the changes involved in menopause.

*Age* - the older you are, the greater your risk of osteoporosis. Your bones become less dense and weaker as you age.

*Body size* - Small, thin-boned women are at greater risk.

*Ethnicity* - Caucasian and Asian women are at highest risk. African-American and Latino women have a lower but significant risk.

*Family history* - Susceptibility to fracture may be, in part, hereditary. People whose parents have a history of fractures also seem to have reduced bone mass and may be at risk for fractures.

**Risk factors you can change:**

Sex hormones: abnormal absence of menstrual periods (amenorrhea), low estrogen level (menopause), and low testosterone level in men.

Anorexia.

A lifetime diet low in calcium and vitamin D.

Use of certain medications, such as glucocorticoids or some anticonvulsants.

An inactive lifestyle or extended bed rest.

Cigarette smoking.

Excessive use of alcohol.

**Prevention**

To reach optimal peak bone mass and continue building new bone tissue as you get older, there are several factors you should consider:

**Calcium.** An inadequate supply of calcium over the lifetime is thought to play a significant role in contributing to the development of osteoporosis. Many published studies show that low calcium intakes appear to be associated with low bone mass, rapid bone loss, and high fracture rates. National nutrition surveys have shown that many people consume less than half the amount of calcium recommended to build and maintain healthy bones. Good sources of calcium include low fat dairy products, such as milk, yogurt, cheese and ice cream; dark green, leafy vegetables, such as broccoli, collard greens, bok choy and spinach; sardines and salmon with bones; tofu; almonds; and foods fortified with calcium, such as orange juice, cereals and breads. Depending upon how much calcium you get each day from food, you may need to take a calcium supplement.

Calcium needs change during one's lifetime. The body's demand for calcium is greater during childhood and adolescence, when the skeleton is growing rapidly, and during pregnancy and breastfeeding. Postmenopausal women and older men also need to consume more calcium. This may be caused by inadequate amounts of vitamin D, which is necessary for intestinal absorption of calcium. Also, as you age, your body becomes less efficient at absorbing calcium and other nutrients. Older

adults also are more likely to have chronic medical problems and to use medications that may impair calcium absorption.

**Vitamin D.** Vitamin D plays an important role in calcium absorption and in bone health. It is synthesized in the skin through exposure to sunlight. While many people are able to obtain enough vitamin D naturally, studies show that vitamin D productiondecreases in the elderly, in people who are housebound, and during the winter. These individuals may require vitamin D supplementation to ensure a daily intake of between 400 to 800 IU of vitamin D. Massive doses are not recommended.

**Exercise.** Like muscle, bone is living tissue that responds to exercise by becoming stronger. The best exercise for your bones is weight-bearing exercise, that forces you to work against gravity. These exercises include walking, hiking, jogging, stair-climbing, weight training, tennis, and dancing.

Smoking. Smoking is bad for your bones as well as for your heart and lungs. Women who smoke have lower levels of estrogen compared to nonsmokers and frequently gothrough menopause earlier. Postmenopausal women who smoke may require higher doses of hormone replacement therapy and may have more side effects. Smokers also may absorb less calcium from their diets.

**Alcohol.** Regular consumption of 2 to 3 ounces a day of alcohol may be damaging to the skeleton, even in young women and men. Those who drink heavily are more prone to bone loss and fractures, both because of poor nutrition as well as increased risk of falling.

**Medications that cause bone loss.** The long-term use of glucocorticoids (medications prescribed for a wide range of diseases, including arthritis, asthma, Crohn's disease, lupus, and other diseases of the lungs, kidneys, and liver) can lead to a loss of bone density and fractures. Other forms of drug therapy that can cause bone loss include long-term treatment with certain antiseizure drugs, such as phenytoin (Dilantin®) and barbiturates; gonadotropin releasing hormone (GnRH) analogs used to treat endometriosis; excessive use of aluminum-containing antacids; certain cancer treatments; and excessive thyroid hormone. It is important to discuss the use of these drugs with your physician, and not to stop or alter your medication dose on your own.

**Prevention Medications.** Various medications are available for the prevention, as well astreatment, of osteoporosis. See section entitled "Therapeutic Medications."

**Symptoms.** Osteoporosis is often called the "silent disease" because bone loss occurs without symptoms. People may not know that they have osteoporosis until their bones become so weak that a sudden strain, bump, or fall causes a hip fracture or a vertebra to collapse. Collapsed vertebra may initially be felt or seen in the form of severe back pain, loss of height, or spinal deformities such as kyphosis, or severely stooped posture.

**Detection.** Following a comprehensive medical assessment, your doctor may recommend that you have your bone mass measured. Bone mineral density (BMD) tests measure bone density in the spine,

wrist, and/or hip (the most common sites of fractures due to osteoporosis), while others measure bone in the heel or hand. These tests are painless, noninvasive, and safe. Bone density tests can:

Detect low bone density before a fracture occurs.
Confirm a diagnosis of osteoporosis if you have already fractured.
Predict your chances of fracturing in the future.
Determine your rate of bone loss and/or monitor the effects of treatment if the test is conducted at intervals of a year or more.

**Treatment.** A comprehensive osteoporosis treatment program includes a focus on proper nutrition, exercise, and safety issues to prevent falls that may result in fractures. In addition, your physician may prescribe a medication to slow or stop bone loss, increase bone density, and reduce fracture risk.

**Nutrition.** The foods we eat contain a variety of vitamins, minerals, and other important nutrients that help keep our bodies healthy. All of these nutrients are needed in a balanced proportion. In particular, calcium and vitamin D are needed for strong bones as well as for your heart, muscles, and nerves to function properly. (See Prevention section for recommended amounts of calcium.)

**Exercise.** Exercise is an important component of an osteoporosis prevention and treatment program. Exercise not only improves your bone health, but it increases muscle strength, coordination, and balance and leads to better overall health. While exercise is good for someone with osteoporosis, it should not put any sudden or excessive strain on your bones. As extra insurance against fractures, your doctor can recommend specific exercises to strengthen and support your back.

**Therapeutic Medications.** Currently, estrogen, calcitonin, alendronate, raloxifene, and risedronate are approved by the U. S. Food and Drug Administration (FDA) for the treatment of postmenopausal osteoporosis. Estrogen, alendronate, risedronate, and raloxifene are approved for the prevention of the disease. Alendronate is approved for the treatment of osteoporosis in men. Alendronate and risedronate are approved for use by men and women with glucocorticoid-induced osteoporosis.

**Estrogen.** Estrogen replacement therapy (ERT) has been shown to reduce bone loss, increase bone density in both the spine and hip, and reduce the risk of hip and spinal fractures in postmenopausal women. ERT is administered most commonly in the formof a pill or skin patch and is effective even when started after age 70. When estrogen is taken alone, it can increase a woman's risk of developing cancer of the uterine lining (endometrial cancer). To eliminate this risk, physicians prescribe the hormone progestin in combination with estrogen (hormone replacement therapy or HRT) for those women who have not had a hysterectomy. ERT/HRT relieves menopause symptoms and has been shown to have beneficial effects on both the skeleton and heart.

# Brittle bone disease (osteogenesis imperfecta)

**Written by** Dr Colin R Paterson, consultant physician

## What is osteogenesis imperfecta?

Osteogenesis imperfecta (OI) is the most common disease causing fractures in childhood. It also causes fractures in adults. OI is a genetic disorder usually resulting from abnormalities of the genes that control the production of a protein called collagen; which is the main protein in bone and essential for its strength. The fragility of bone in OI is due to the collagen problems; it has nothing to do with the calcium part of bone, which is what shows up on X-rays.

## How common are fractures?

Some OI children are born with fractures that have taken place in the womb. Others have their first fractures soon after birth or several years later. Some people with OI have so few fractures in childhood that the correct diagnosis is not made. Fractures are difficult to predict, especially in childhood. Some occur with normal handling. Some occur with so little trauma that the usual signs of a fracture may not be seen and the fracture is not identified till some weeks or months later when an X-ray is done for another reason. The bones do not always behave in a brittle way; fractures may fail to occur when expected from an injury. The reason for these variations is quite unknown.

In both sexes and in almost all types of OI the fracture rate diminishes during the teenage years and remains low in adult life. The reason for this is not known.

## What other clinical problems can occur?

Besides fractures there may be problems in other parts of the body; most of these are, like the fractures, the result of the defects of collagen.

* The joints may be lax.

* The whites of the eyes may be blue or grey.

* The teeth may be discoloured and fragile.

* There may be an increased liability to bruising (thought to be due to the defective collagen in small blood vessels).

* Deafness may occur (see below).

* Hernias are more common in people with OI.

* Excessive sweating or intolerance of heat are common complaints; the cause of this is not known.

## Is OI inherited?

OI in an individual is present from the time of conception. In some people, mostly those with milder OI, the disorder passes from one generation to another. In some of these people, and in most with severe OI, it arises without any family history. In most, but not all, of these the cause is a 'new genetic mutation' - in other words the responsible change in the person's genes arises anew, and not because it has been passed on from a parent. It is important to obtain advice from a specialist in gene problems (clinical geneticist) who may be able to identify the pattern of inheritance and advise on the risk to further children or the risk of passing on the condition.

## How is OI diagnosed?

In most people the diagnosis is made from the pattern of fractures and the finding of any of the associated clinical features such as blue or grey whites of the eyes. However, it is important to recognise that none of these signs may be present and that the diagnosis may be very difficult.

In severely affected people X-rays may show characteristic abnormalities - the result of previous fractures. In many people with only mild or moderate OI the X-rays may appear normal at the time of the first few fractures. Later, in bones that have been the site of previous fractures, the bones may appear demineralised (less white on X-ray) and reduced radiation may be needed to obtain satisfactory films for the diagnosis of fractures.

In about half of people with mild OI a useful sign is seen in the skull where there may be additional small bones in the sutures known as wormian bones.

Bone density measurements are usually unhelpful for the diagnosis of OI. They frequently give normal results in bones that have not previously been fractured.

In the USA two specialised tests are sometimes used for the diagnosis of OI. One involves taking a small piece of skin, culturing the cells and chemically examining the collagen produced. The other uses a blood sample and searches for mutations

of the genes coding for the collagen of bone. Both tests are labour-intensive and neither test is more than 85 per cent accurate in identifying cases of OI.

## What treatment can be given?

The mainstay of treatment is competent orthopaedic care at the time of fractures, to ensure that each fracture heals in a good position. Patients should be mobilised as early as possible to minimise the loss of bone due to immobilisation. In some circumstances 'rodding' operations, in which fixed or telescopic metal rods are inserted into the shafts of bones, are very helpful, particularly in children with very frequent fractures or appreciable deformity.

Help in the form of competent occupational therapy may be invaluable in ensuring that parents are given good advice in handling of a young child, in prescribing the most appropriate seating or wheelchairs, in advising on adaptations to the home and on practical ways of ensuring a good education.

There is no drug treatment for OI itself. Trials of growth hormone have been disappointing. Trials of various bisphosphonate drugs are in progress and have given encouraging results in some patients with the more severe types of OI.

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| Disorder Name: | Symptoms/Warning Signs: | Diagnosis Methods: | Treatment(s): | Prevention Methods: |
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