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# Rheumatoid Arthritis

## WHAT IS RHEUMATOID ARTHRITIS?

Rheumatoid arthritis, or RA, is a common form of arthritis (*arth* means joint, *itis* means inflammation). RA causes inflammation in the lining of joints, leading to warmth, decreased range of motion, swelling and pain in the joint. RA tends to persist for many years. Typically, it affects many different joints throughout the body and can cause damage to the cartilage, bone, tendons and ligaments of the joints.

In the United States, almost one percent of the population, or 2.1 million people, has RA. However, anyone can get RA, including children. The disease most commonly begins in the 30s and 40s. Among people with RA, women outnumber men three-to-one. The disease occurs in all ethnic groups and in all parts of the world.

## WHAT CAUSES RA?

The cause of RA is not yet known, although we do know that the body's immune system plays an important role in the inflammation and joint damage that occurs in RA. The

immune system is the body's defense against bacteria, viruses and other foreign cells. In RA, for reasons that aren't yet well understood, the immune system attacks the body's own joints and other organs.

In RA, cells of the immune system move out from the bloodstream, invade the joint tissues and cause inflammation. Fluid containing these cells builds up in the joint. The immune and inflammatory cells in the joint tissue and fluid produce many substances, including enzymes, antibodies and cytokines that attack the joint and cause damage.

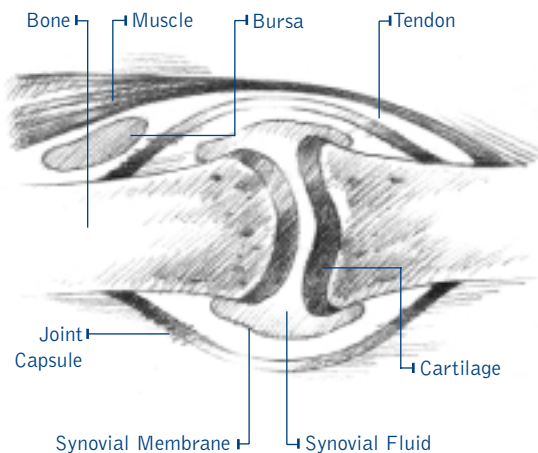
## The Role of Genes

Genes play an important role in the development of RA. However, the genes that are known to be associated with RA are common and found in many people who will never develop RA. It is believed that these genes create a susceptibility or tendency for an increased risk to develop RA. Why some people with these genes are at increased risk for RA and others are not is unknown and remains an area of intense research. Scientists are currently conducting

research to increase our understanding of these genes and other factors (such as infection, injury, hormonal changes and environmental factors) that may lead to the development of RA.

### WHAT ARE THE SYMPTOMS?

The symptoms and course of RA will vary from person to person. In almost all people who have RA, joint symptoms change day by day but some degree of arthritis is always present. In some people, the disease may be mild with periods of activity (worsening joint inflammation) called flares. In others, the disease is continuously active and gets worse, or progresses, over time.



Rheumatoid arthritis can affect different parts of a joint.

If you have RA, you will likely experience inflamed joints that are warm, swollen, tender, often red and painful, and difficult to move. These physical signs of arthritis are due to inflammation of the lining, or synovium, of the joints. If this inflammation persists or does not respond well to treatment, damage of nearby cartilage, bone, tendons and ligaments can follow. This often leads to joint deformity and disability and can be permanent.

RA may cause you to feel sick all over, especially during flares. You may lose your appetite, lose weight, run a low-grade fever and have little energy. You may become anemic; that is, you may have a lower number of red blood cells than normal. People with RA also may develop rheumatoid nodules, which are lumps of tissue that form under the skin, often over bony areas exposed to pressure. These occur most often around the elbow but can be found elsewhere on the body such as on the fingers, over the spine or on the feet.

Occasionally, people with RA develop inflammation of the linings that surround the heart (pericarditis) and lungs (pleuritis) or inflammation of the lung tissue itself. Dryness of the eyes and mouth due to inflammation of tear glands and salivary glands (called sicca syndrome or Sjögren's syndrome) also is common.

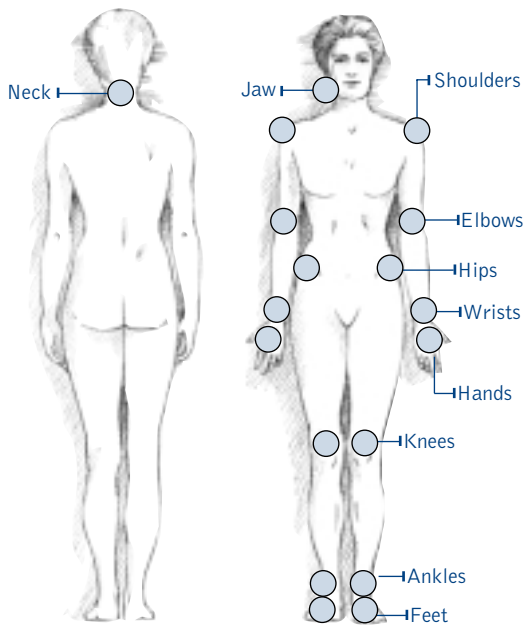
In some instances, people with RA may develop vasculitis (inflammation of blood vessels) that can cause inflammation and tissue damage affecting the skin, nerves and other organs.

### HOW IS RA DIAGNOSED?

To diagnose RA, your physician will take a medical history and perform a physical examination. The doctor will look for certain features of RA, including swelling, warmth and limited motion in joints throughout your body, as well as nodules or lumps under the skin. Your doctor may also ask if you have experienced fatigue and an overall feeling of stiffness, especially when you first get up, both of which are associated with RA. The pattern of joints affected by arthritis can help distinguish RA from other conditions.

Your physician also may recommend certain blood tests and X-rays. The presence of an

antibody called rheumatoid factor may indicate RA but rheumatoid factor is also found in many people who do not have RA. Other lab test abnormalities include anemia and an elevated erythrocyte sedimentation rate (ESR) or C-reactive protein (CRP), which indicates that inflammation is present. While these blood tests can be helpful in making a diagnosis, there is no single test that can determine an RA diagnosis.



Joints that may be affected by RA

Although X-rays early in RA often are normal, the joint damage shown on X-rays as the disease progresses can help confirm the diagnosis. Typical findings suggestive of RA include bone loss at the edges of the joint – called erosions – combined with loss of joint cartilage. With more than 100 forms of arthritis, the diagnosis and management of RA requires the expertise of a specialist. ALL patients with RA should see a rheumatologist.

## HOW IS RA TREATED?

Right now, there is no cure for RA. Until the cause of RA is known, it may not be possible to eliminate the disease entirely. However, highly effective drug treatments exist, and early treatment is critical to prevent the damage that RA can cause. Current treatment methods focus on relieving pain, reducing inflammation, stopping or slowing joint damage, and improving patient function and well-being. Modern treatments have substantially improved the quality of life for people with RA.

Your treatment program will be tailored to meet your needs, taking into account the severity of your arthritis, other medical conditions you may have and your individual lifestyle. Your doctor and other members of your health-care team will work with each other and with you to find the best treatment program.

## Your Health-Care Team

Treating RA often requires a team approach in which you benefit from the expertise of health professionals from different disciplines. A rheumatologist, a physician with special training in arthritis and other diseases of the bones, muscles and joints, should be involved and generally serves as the leader of the health-care team. The rheumatologist coordinates care with the family physician, a physician specializing in internal medicine or other health-care professionals.

Other health professionals such as physical therapists, occupational therapists, nurses, psychologists, orthopaedic surgeons and social workers often play important roles in helping you to manage your RA.

## What Medications Are Used?

Medications used to treat RA can be divided into two groups: those with the potential to help relieve your symptoms and those with the potential to modify the disease. Your physician may recommend using two or more medications at a time. Each medication has a distinct purpose in the treatment of RA. Some of these medications affect the immune system or have other side effects, making careful monitoring very important during your treatment.

Talk to your doctor about dosing and side effects and if you have any questions about your medications.

### SYMPTOMATIC MEDICATIONS

The following medications may relieve the symptoms associated with RA.

#### NSAIDs and Aspirin

Nonsteroidal anti-inflammatory drugs, or NSAIDs, such as aspirin, ibuprofen, naproxen sodium and others, are used to help relieve pain and treat inflammation that accompany RA. However, NSAIDs alone are not adequate treatment for RA. Most patients with RA will need to take disease-modifying medications or biologic agents.

NSAIDs and aspirin can cause side effects such as stomach pain or even bleeding. If you experience these side effects, your doctor may prescribe additional medications that may help reduce the risk of these side effects or another medication for RA that has minimal effects on the stomach. Most physicians recommend that patients take NSAIDs with food to reduce symptoms related to stomach problems.

Selective COX-2 inhibitors, such as celecoxib (*Celebrex*), rofecoxib (*Vioxx*) and valdecoxib (*Bextra*), are a subcategory of NSAIDs that may be safer for the stomach.

#### Analgesics

Analgesics relieve pain in RA but have no effect on inflammation or joint damage. These medications include acetaminophen (*Tylenol* and other brands) and tramadol (*Ultram*), as well as narcotic pain medications such as acetaminophen with codeine and propoxyphene (*Darvon* and other brands). Narcotic pain medications alone are not recommended to treat RA long term because they often have undesirable side effects and can produce drug dependency.

#### Corticosteroids

Corticosteroids, also called glucocorticoids, such as cortisone and prednisone, can help relieve your RA symptoms. These medications are related to cortisol, a hormone that occurs naturally in the body.

Low doses of corticosteroids may be used along with aspirin, NSAIDs, disease-modifying antirheumatic drugs (DMARDs) or biologic agents to help control joint inflammation.

Much of the benefit and many of the side effects of corticosteroids are directly related to the dose given. The goal is to find the lowest effective dose that will avoid as many of the side effects as possible and to use corticosteroids for the shortest period of time possible. When prescribed, corticosteroids are typically given in combination with DMARDs or biologic agents and should not be relied upon as the only form of drug treatment for RA.

## Caution

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It is dangerous – possibly even life-threatening – to suddenly stop or significantly reduce the amount of corticosteroids you are taking, because you may experience a flare of your disease or other serious problems. Your doctor needs to taper (slowly reduce) the dose of corticosteroids when a reduction in the dose is needed. Increasing the dose without instructions from your physician may also be harmful, even if you temporarily feel better. Always consult your physician before changing the dose of any medication, including prednisone and other corticosteroids.

If you take corticosteroids for a few months, you may experience side effects. These side effects can be serious and can include easy bruising, osteoporosis, cataracts, glaucoma, weight gain, a round face, susceptibility to infections, diabetes, high blood pressure, and emotional and psychiatric problems.

If you take corticosteroids on a regular basis, talk to your doctor about calcium and vitamin D intake, as well as hormones and other medications that may prevent osteoporosis.

Corticosteroids may be injected directly into joints affected by RA. Such treatments can reduce inflammation in joints that are swollen or painful, or that frequently flare. Direct injection of corticosteroids into the joint rapidly controls inflammation and avoids most of the undesirable side effects seen with daily corticosteroid pills. The injections may produce a temporary effect on your whole body. Injections may have harmful side effects on the joints if given more than a few times a year, and

there is the chance of the joint becoming infected, although this is rare.

## DISEASE-MODIFYING MEDICATIONS

Drugs that both relieve symptoms and have the potential to modify the disease process of RA are called disease-modifying antirheumatic drugs (DMARDs). As the foundation of all successful approaches to managing RA, DMARDs are an important part of the treatment plan for almost all people with RA. Starting them early is the key to long-term success. These drugs help control RA and prevent deformity and disability.

### Methotrexate

One of the most commonly used DMARDs for the treatment of RA is methotrexate. Methotrexate (*Rheumatrex*, *Trexall*) is taken once a week in pill, liquid or injectable form.

Your physician will periodically check your liver function and blood counts while you are taking the drug to detect abnormalities of liver and bone marrow function. Individuals taking methotrexate should not drink alcohol because the combination may increase the risk of liver damage.

## Caution

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Methotrexate can cause birth defects. Men and women should stop taking methotrexate 90 days prior to a planned pregnancy. Pregnant and nursing women and people who have serious kidney or liver disease, who drink alcohol, or who are HIV-positive should not take methotrexate. Notify your doctor at once if you or your partner becomes pregnant while you are taking methotrexate.

Other possible side effects of methotrexate include an upset stomach, mouth sores, headaches, dizziness, fatigue, flu-like symptoms or diarrhea. The daily use of a simple vitamin – folic acid – may reduce some of those side effects. A rare but serious possible side effect of methotrexate is inflammation of the lungs. Notify your doctor immediately if you develop a dry or hacking cough or experience significant shortness of breath, especially if you have a fever, while taking methotrexate.

#### Hydroxychloroquine

Hydroxychloroquine (*Plaquenil*) is commonly referred to as an antimalarial drug, because it was originally developed for the treatment of malaria. Hydroxychloroquine has been used for many years to treat RA to relieve inflammation, swelling and joint pain.

Hydroxychloroquine is given in tablet form, usually once or twice a day. It is the safest of all DMARDs, but people taking it must have regular eye examinations to check for potential damage to the retina, which can cause decreased color or peripheral vision, even though such damage is extremely rare. Loss of vision will not occur if you take the recommended dose and have regular eye check-ups.

#### Sulfasalazine

Sulfasalazine (*Azulfidine*) is a combination antibiotic/anti-inflammatory drug used to treat RA. Side effects can include rashes, upset stomach, headaches, lowered counts of white blood cells and platelets, and effects on the liver. People who are allergic to medications containing sulfa cannot take sulfasalazine.

#### Leflunomide

Leflunomide (*Arava*) is a disease-modifying drug used to treat RA. Side effects can include skin rash, gastrointestinal symptoms, liver effects and reversible hair loss. You will need to have regular blood tests, including blood counts and liver function studies, while taking this drug.

#### Caution

People with active infections or pregnant or nursing women should not take leflunomide. Because studies have shown leflunomide can cause birth defects in animals, women of child-bearing age must use reliable birth control while on leflunomide. If a woman wishes to become pregnant, she must stop taking leflunomide and take another drug to help eliminate leflunomide from her body, even if she hasn't taken it recently. Men who take leflunomide should follow the same procedure if they wish to father a child.

#### D-Penicillamine

D-penicillamine (*Depen, Cuprimine*) is taken as a daily pill and given on an empty stomach. It requires close supervision and careful monitoring by your doctor. Its use has diminished in recent years because of its side effects and slow onset of action.

#### Azathioprine

Azathioprine (*Imuran*) is an immunosuppressive drug approved for the treatment of RA. It is given as a pill, and requires regular blood tests to monitor drug effects on the bone marrow and liver.

### Cyclosporine

The immunosuppressive drug cyclosporine (*Neoral, Sandimmune*) has been approved by the FDA for treating severe, active RA in combination with methotrexate. There is a risk of kidney damage from cyclosporine and your doctor will frequently check your blood pressure, monitor kidney function and perform blood tests to detect changes.

### Minocycline

Minocycline (*Minocin, Dynacin*) is an antibiotic that has beneficial effects in some patients with RA. Its effectiveness may be greater in the early stages of RA and is most likely due to the drug's anti-inflammatory properties rather than its ability to kill bacteria. People allergic to tetracycline should not take minocycline. The drug may interfere with the effectiveness of certain birth control medications. Skin darkening may occur with prolonged use.

### Biologic Agents

Etanercept (*Enbrel*), infliximab (*Remicade*), anakinra (*Kineret*) and adalimumab (*Humira*), also called biologic response modifiers (BRMs), target specific chemicals in the immune system involved in RA. These BRMs have been approved for the treatment of RA in adults. In addition, etanercept is approved by the FDA for use in children and teenagers (ages 4-17 years) with polyarticular juvenile rheumatoid arthritis (JRA) and adults with psoriatic arthritis and ankylosing spondylitis.

Because these medications affect the immune system, you should not receive live vaccinations such as oral polio, chickenpox, the measles-mumps-rubella vaccine or FluMist. Safeguards, such as not beginning therapy during an infec-

tion or modifying the dose if an infection develops, have made the risk of more serious infection with these drugs very small; however, serious infections have been associated with these BRMs. There is a risk of activating a pre-existing (dormant) tuberculosis (TB) with the TNF inhibitors (etanercept, infliximab and adalimumab), and TB skin tests are recommended prior to starting these drugs. Call your doctor immediately if you develop symptoms of infection while using a BRM. If you have an active infection you should not take BRMs.

If you have a demyelinating disease, such as multiple sclerosis, or if you have congestive heart failure, you should not use etanercept, infliximab or adalimumab.

There also is a possible risk of cancer, particularly lymphoma, with long-term use of TNF inhibitors. To date, however, reported cases of cancer with any of the drugs are within the frequency and types of cancers expected for patients with RA who are not receiving a BRM.

### Exercise, Activity and Rest

For many years, it was thought that people who have arthritis should rest their joints in order to protect them from damage. Now, however, doctors and therapists know that you can improve your health and fitness through exercise – without hurting your joints.

Moderate physical activity on a regular basis helps decrease fatigue, strengthen muscles and bones, increase flexibility and stamina, and improve your general sense of well-being. With this in mind, you can work with your health-care team to determine the best combination of exercise, activity and rest for your condition.

When you have RA, it's important to exercise to keep joints flexible, muscles strong and your

heart and lungs fit. Activity generally refers to everyday tasks related to work, home and leisure time. Rest can be general, like staying in bed, or specific to a joint, like wearing a splint. You may need different amounts of exercise, activity and rest, depending on the activity of your disease. It is important to learn how to adjust your activities to achieve the best physical health.

When a joint is warm, painful and swollen, rest will help reduce the joint's inflammation, and general range-of-motion exercises will help maintain joint movement. Your doctor or therapist can guide you as to how much and what type of rest you need. However, temporarily reducing your activity level does not mean stopping all exercise. You should still work on joint mobility by performing range-of-motion exercises and on muscle strength by performing isometric exercises.

Range-of-motion exercises are designed to preserve joint mobility and are generally performed without weights. You move your joints through their full range of motion, paying special attention to the end of the motion where mobility may be lost first.

When your symptoms are brought under control, you should gradually resume a full exercise program that includes aerobic exercise. Cardiovascular exercise is important for your overall health, weight control, muscle strength and energy level. Low-impact conditioning programs, like walking or riding a stationary bicycle, are generally good options. You should consult your doctor or therapist about an appropriate program for you.

### How Do Physical and Occupational Therapists Help?

Therapy can help most people with RA. Physical therapists can evaluate your special

needs and teach you how to exercise appropriately for joint mobility, muscle strength and aerobic fitness. Physical therapists can give you valuable instruction on how to effectively use heat and cold treatments to reduce pain, stiffness and swelling, and make movement easier. At times, physical therapists may use special equipment to apply deep heat or electrical stimulation to reduce pain or improve joint mobility. They also can provide post-operative rehabilitation, splints, walking aids and shoe orthotics.

Occupational therapists teach you how to protect and use your joints. They also show you how to perform daily tasks at work and home in ways that reduce stress on your joints. Occupational therapists can teach you ways to use your energy wisely and plan everyday activities in an efficient manner.

### When Is Joint Surgery the Best Option?

If you experience pain and disability caused by severe joint damage, total joint replacement (also called total joint arthroplasty) may be considered. Joint replacement can help you continue being independent. These procedures are done by orthopaedic surgeons and involve replacement of damaged parts of the joints with metal and plastic parts.

Total hip and total knee replacements are the most common and most successful arthroplasties performed. Most forms of surgery require rehabilitation after surgery to gain maximum benefit from the new joint. You also may be placed on an exercise program before surgery to strengthen your muscles. All joint replacement surgery should be done by a surgeon very experienced in this area.

Doctors typically prescribe a program of



medications and therapy before considering joint replacement.

### Can Diet Help Control RA?

Some people with RA suspect that particular foods may either aggravate or help their arthritis. Careful scientific studies have so far not proven that diet changes are important in either causing or relieving symptoms of RA in most people. Studies have shown that omega-3 fatty acids (found in cold-water fish), when taken in sufficient quantities, can modestly reduce RA inflammation.

It is very important to maintain a healthful diet that includes adequate protein and calcium. During arthritis flares, you may lose your appetite and lose weight. At these times it is important to make sure you consume enough calories. When your arthritis is less active or if you are taking corticosteroids, it is important to avoid excessive weight gain. Consume only very modest amounts of alcohol if you are taking aspirin or NSAIDs, and avoid alcohol altogether if you are taking methotrexate. All patients with RA, and particularly those taking corticosteroids, should take calcium supplements and a multivitamin containing vitamin D. Hormone replacement and/or other agents also may be needed to reduce bone loss.

Other healthful practices, such as getting regular medical checkups and not smoking, also are very important. Smoking makes you more likely to get RA, and if you already have RA, it makes it worse.

### HOW CAN YOU BEST MANAGE RA?

If you have RA, you may find it difficult to cope with the disease. Because RA may be unpredictable, is often characterized by long-

standing or ongoing pain, and can affect so many joints, you may experience emotional stress or depression. Some feelings of depression are normal, but they can make it more difficult for you to successfully manage the disease.

It is important for you to decide to live every day as fully as possible. Medications, rest and exercise are the best combination for relieving symptoms, but staying focused on the positive aspects of life also can help.

It's important for you and your family to learn all you can about the disease and to discuss it with each other, with your physicians and with other health professionals involved in your care. Counseling from mental health professionals on how to develop coping and problem-solving skills may also help.

Some people with RA may need special medications to relieve depression. Knowing that you are not alone and that others understand something about the challenges you face can be your best emotional support.

### RESEARCH

In the past year, investigators funded by the Arthritis Foundation have reported major progress in a number of areas related to rheumatoid arthritis, including significant discoveries about genetic factors that are important in RA, improved ways to detect and monitor disease activity, new techniques for repairing cartilage damage and the development of new approaches to treatment. For example, researchers showed that new gene analysis technology can be used to identify specific proteins that stimulate the defective immune response in RA, paving the way for more efficient diagnostic screening, and the development of specific, targeted therapies such as vaccines that turn off the immune response.

## THE ARTHRITIS FOUNDATION

The mission of the Arthritis Foundation is to improve lives through leadership in the prevention, control and cure of arthritis and related diseases.

The Arthritis Foundation supports research with the greatest potential for advances and has invested more than \$320 million in these efforts since its inception in 1948. Additionally, the Arthritis Foundation supports key public policy and advocacy efforts at a local and national level in order to make a difference on behalf of 70 million people living with arthritis.

As your partner in taking greater control of arthritis, the Arthritis Foundation also offers programs and services nationwide to make life with arthritis easier and less painful and to help

you become an active partner in your own health care.

Contact us at (800) 283-7800 or visit us on the Web at [www.arthritis.org](http://www.arthritis.org) to become an Arthritis Advocate or to find out how you can become involved.

The Arthritis Foundation is a supporter of the worldwide Bone and Joint Decade (2000-2010), a concerted global effort to help people affected by musculoskeletal disorders, such as arthritis.

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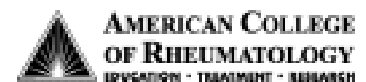
**For more information:** The Arthritis Foundation offers a wide variety of books, brochures and videos about different forms of arthritis, treatment and self-management techniques to help you take control of your arthritis. To order any of these products, become an Arthritis Foundation member or to subscribe to the Arthritis Foundation's award-winning consumer health magazine, *Arthritis Today*, call (800) 283-7800. Call or visit our Web site ([www.arthritis.org](http://www.arthritis.org)) to find out how you can take control of your arthritis and start living better today!

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### MISSION STATEMENT:

The mission of the Arthritis Foundation is to improve lives through leadership in the prevention, control and cure of arthritis and related diseases.

This brochure has been reviewed by the  
AMERICAN COLLEGE OF RHEUMATOLOGY.



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