

# NIH News in Health

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## Painful Joints?

### Early Treatment for Rheumatoid Arthritis Is Key

Painful, swollen, and stiff joints can be a sign of arthritis. Rheumatoid arthritis is one of the most common forms. The pain and stiffness can interfere with your life at home and at work. For some people, the disease is mild, but for others it can be disabling. Scientists continue to search for the cause of this disease and for ways to improve treatment.

Arthritis is an **inflammation** of the joints. There are over 100 types of arthritis. While their symptoms can be similar, their underlying causes vary. Osteoarthritis is the most common type of arthritis. It's far more common than rheumatoid arthritis. Osteoarthritis is caused by wear and tear on your joints. In rheumatoid arthritis, your immune system—which normally helps protect your body from infection and disease—starts attacking your joint tissues.

Anyone can get rheumatoid arthritis. The disease most often begins in middle age or later. But it can occur at any age. Even children sometimes get a similar form of arthritis. Some types of arthritis affect one joint at a time, but rheumatoid arthritis can affect your whole body.

It's important to get the correct diagnosis because each form of arthritis needs to be treated differently. To diagnose rheumatoid arthritis, doctors use medical history, physical exams, X-rays, and lab tests.



#### Definitions

#### Inflammation

Swelling and irritation caused by the body's protective response to injury.

There's no single test for the disease. It's not easy to diagnose.

"The joint swelling in rheumatoid arthritis is squishy, and very different from the hard bony enlargement of the finger joints that is sometime present in osteoarthritis," explains Dr. Michael M. Ward, who oversees rheumatoid arthritis research at NIH.

Your joints may appear red and feel warm. Pain and stiffness may be worse after you wake up or have been resting for a long time. Over time, your immune system damages the tough, flexible tissue (cartilage) that lines joints. This damage can be severe and deform your joints.

Scientists don't know exactly what causes rheumatoid arthritis. It's likely a combination of genetics and environmental triggers, such as tobacco smoke or viruses. Hormones may also play a role. More women are diagnosed with rheumatoid arthritis than men. The disease sometimes improves during pregnancy or flares up after pregnancy.

What scientists do know is that the damage is caused by the immune system gone awry. The body's defense system mistakenly attacks the membrane that lines joints, such as in the wrists, fingers, and toes. Joints in the neck, knees, hips, ankles, and elsewhere can also be affected.



"The immune system is supposed to be something that does good things for you," says Dr. M. Kristen Demoruelle, an NIH-funded arthritis expert at the University of Colorado Anschutz Medical Campus. "It's supposed to help you fight infections. But in rheumatoid arthritis—for reasons that we don't yet understand—the immune system gets confused and then starts to attack your joints instead."

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There's no cure for rheumatoid arthritis. But there are effective treatments. Treatment can relieve pain, reduce joint stiffness and swelling, and prevent further joint damage.

Research advances have improved patient outcomes in the past 10 to 20 years. Doctors no longer wait to start treating a person with rheumatoid arthritis. Now, they know to begin treatment right away—before joint

damage worsens. Early detection is very important to increase the chance that treatment is successful.

"If we can get you into low disease activity by 6 months and remission [no signs of the disease] by 1 year, we've got an incredibly good chance of the disease having a very minimal impact on your life," says Dr. Vivian P. Bykerk, an NIH-funded arthritis researcher at the Hospital for Special Surgery in New York.

There are many different classes of drugs available. Many of the drugs, like NSAIDs (nonsteroidal anti-inflammatory drugs) and steroids, work by reducing inflammation. Such drugs may be used in combination with others that have been shown to slow joint destruction.

NIH scientists helped develop a new class of drug for rheumatoid arthritis called Janus kinase (JAK) inhibitors. These drugs work by suppressing the body's immune response. Several years ago, the first drug in this new class was approved by FDA for moderate to severe rheumatoid arthritis. Researchers continue to investigate new types of drugs and drug combinations.

"We really have to rely on our experience. We consider the combination of signs, symptoms, and blood tests to choose the right treatment," Bykerk explains. Once treatment for rheumatoid arthritis is underway, patients need frequent checkups. Doctors may need to try and adjust different drugs or drug combinations to find the best fit



## Web Links

For more about rheumatoid arthritis, click the "Links" tab at: [newsinhealth.nih.gov/issue/Apr2017/Feature1](http://newsinhealth.nih.gov/issue/Apr2017/Feature1)

for each person. Treatments are usually required for the long term to maintain control of the disease. For some people, symptoms go on for years, even a lifetime. Sometimes after months of mild disease, symptoms can flare up again.

Bykerk also works on an NIH-supported team of scientists who are searching for more effective treatment approaches. The team analyzes joint tissue and blood samples from people with rheumatoid arthritis to better understand the genes and proteins that trigger and drive the disease. The researchers aim to learn why some people respond differently to different treatments. They also hope to one day be able to tailor treatments to each person. Other studies are exploring how long people need to be treated once the disease is under control to prevent it from returning.

Rheumatoid arthritis can affect virtually every area of your life, from work to relationships. If you have rheumatoid arthritis, there are many things you can do to help maintain your lifestyle and keep a positive outlook. Exercise helps keep your muscles healthy and strong, preserve joint mobility, and maintain flexibility. Rest helps to reduce joint inflammation, pain, and fatigue. Ask your doctor how best to balance exercise and rest for your situation.

New research advances continue to help improve quality of life for people with rheumatoid arthritis. Talk with your doctor about how to treat your joint pain and stiffness so that you can lead a full, active, and independent life. ■



## Wise Choices Arthritis Tips

- **Don't smoke.** Smoking increases the risk of getting rheumatoid arthritis.
- **Be active.** Walking, swimming, and other forms of physical activity help to reduce pain and stiffness.
- **Rest.** Taking breaks from activity helps to reduce active joint inflammation and pain, and to fight fatigue.
- **Take your medicine.** Follow your doctor's instructions for taking pain relievers and other medicines.
- **Use heat or cold.** You can use either heating pads or cold therapy to reduce pain.
- **Find a support group.** You may find it helpful to talk to other people about how they cope with the disease.

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# Keep Your Voice Sound

## How to Prevent and Avoid Voice Problems

Whether answering the phone, chatting with coworkers, or even letting loose on karaoke nights, your voice helps you connect with others. It acts as a reflection of your personality, mood, and health. Experts estimate that nearly 18 million adults in the U.S. have voice problems. You can take steps to keep your voice healthy and avoid problems.

In many ways, your voice is as unique as your fingerprint. It's produced in your throat by 2 bands of muscle tissue called vocal folds, which sit at the top of your windpipe. The larynx, commonly called the voice box, houses the vocal folds.

When you speak, the folds come together as air from your lungs rushes through them. The air blowing through the folds makes them vibrate. The vibrations make sound waves that travel through your throat, nose, and mouth. The size and shape of these structures create the pitch, loudness, and tone of your voice. That's why each person's voice sounds so different.

"Your voice adds a layer of meaning to your words," says



Dr. Lana Shekim, a voice and speech expert at NIH. Whether you're joyful, disappointed, or grieving, your voice helps to convey your emotions to others, with or without words. Even before infants can speak, they make happy or distressed vocalization to communicate with caregivers.

People who depend on their voices for work—like teachers, lawyers, singers, and politicians—are at risk of overusing their voice. Overuse and misuse of your voice such as screaming, cheering, or talking above loud background noises can strain your vocal folds. It's best to avoid such activities. Perhaps you've woken up with a hoarse voice after attending a concert or a sporting event. Repeatedly clearing your throat; a raw, achy throat; a deeper voice; or a sudden inability to hit high notes when singing are also signs of an unhealthy voice.

"We often protect a musical instrument, like a violin, by carefully storing it inside a wooden box lined with soft velvet," says Shekim. "But we don't think about protecting our own voices in the same way. The truth is: we can buy a new violin, but we cannot buy a new larynx."

It's important to identify and avoid behaviors that might harm your voice. For example, instead of speaking loudly when talking to a large group, consider arranging for a microphone. On days that your voice sounds raspy or hoarse, protect it by not straining or overusing it. Choose a quiet restaurant when meeting friends for a meal.

"In keeping your voice healthy, always remember, what is good for your well-being is good for your voice," Shekim adds. Drinking plenty of water and using your voice less should help relieve hoarseness from misuse or overuse.

Although many voice conditions result from misuse or overuse, other voice disorders may be related to disease. Voice disorders may result from growths on the vocal folds, gastric reflux, head or neck cancer, neurological problems, or other causes.

If you think you have a voice problem, talk with your health care provider. They may recommend that you see a specialist—such as an ear, nose, and throat doctor (otolaryngologist) or a speech-language pathologist—to help diagnose and treat voice issues. ■



### Wise Choices Stay Hydrated to Avoid Voice Problems

- Drink 6 to 8 glasses of water a day. This helps keep your vocal folds moist and healthy.
- Limit intake of caffeinated or alcoholic drinks. These can dehydrate your body and make the vocal folds and larynx dry.
- Don't smoke, and avoid second-hand smoke. Cigarette smoke can irritate the vocal folds.



### Web Links

For more about voice health, click the "Links" tab at: [newsinhealth.nih.gov/issue/Apr2017/Feature2](https://newsinhealth.nih.gov/issue/Apr2017/Feature2)

# Health Capsules

For links to more information, see these stories online:  
[newsinhealth.nih.gov/issue/Apr2017/Capsule1](http://newsinhealth.nih.gov/issue/Apr2017/Capsule1)

## Reducing Underage Drinking Among American Indians

Underage drinking is a nationwide problem. American Indian teens have higher rates of alcohol use before age 15 than other U.S. teens. They also have higher rates of alcohol problems. Rural teens in general are more likely than other U.S. teens to misuse alcohol. But ways to prevent alcohol use in these groups haven't been studied well.

NIH-funded researchers tested 2 strategies for reducing drinking among high school students in the Cherokee Nation area of northeastern Oklahoma. Cherokee citizens are nearly half the population in the area, but whites and other racial/ethnic minorities also live there.

In one prevention strategy, teams

of local adults were trained to take actions to reduce youth access to alcohol in their communities.

The other prevention strategy was aimed at the level of the individual high school student. Social workers in high schools met one-on-one with each student each semester to counsel them about alcohol use and motivate them to avoid drinking. The social workers invited students who reported high-risk drinking to follow-up sessions and referred them to specialty treatment when needed.

Six communities, each served by a single high school, took part in the study. More than 1,600 students participated. Each strategy was tested in one community. Students

in 2 communities received both strategies. Those in the last 2 received neither for comparison.

The study found that both prevention strategies significantly reduced youth alcohol use. Students receiving one or both strategies were less likely to report any use of alcohol in the past 30 days. They were also less likely to report heavy drinking (5 or more drinks on at least one occasion).

The findings add to growing evidence that these strategies can help reduce alcohol problems in diverse communities. ■

## How Cancer Cells Spread in the Body

Cancer can sometimes be found in several parts of the body. Most of the time, these are not separate types of cancer. Rather, cancer has developed in one organ and spread to other areas. When cancer spreads, it's called metastasis.

In metastasis, cancer cells break away from where they first formed, travel through the blood or lymph system, and form new tumors in other parts of the body. Cancer can spread to almost anywhere in the body. But it commonly moves into your bones, liver, or lungs.

When these new tumors form, they are made of the same kind of cancer cells as the original tumor. For example, lung cancer cells that are found in the brain don't look like

brain cells. This disease would be called metastatic lung cancer, not brain cancer.

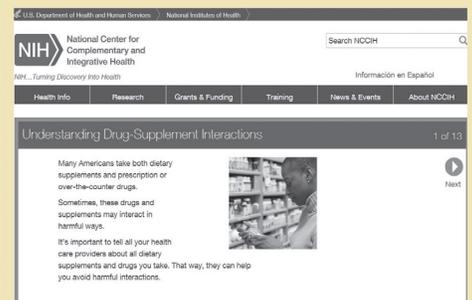
Cancer cells can be sent to the lab for tests to identify the origin of the cells. Knowing the type of cancer and whether it has spread helps the health care team suggest a treatment plan. The goal of treatment is to stop or slow the growth of cancer or to relieve symptoms.

A new animated video, *Metastasis: How Cancer Spreads*, shows how cancer cells can break off from the primary tumor in one organ, travel through a blood vessel, and invade another organ to form a new tumor. Watch the video and learn more about how cancer spreads at [www.cancer.gov/types/metastatic-cancer](http://www.cancer.gov/types/metastatic-cancer). ■

### Featured Website Understanding Drug-Supplement Interactions

[nccih.nih.gov/health/know-science/how-medications-supplements-interact](http://nccih.nih.gov/health/know-science/how-medications-supplements-interact)

Did you know that taking medicine and dietary supplements at the same time can be harmful? It's important to tell your health care providers about all the drugs and supplements you take. Learn more about how to avoid problems at this website.



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