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# Raynaud's disease

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## Definition

Raynaud's (ray-NOHZ) disease is a condition that causes some areas of your body — such as your fingers, toes, the tip of your nose and your ears — to feel numb and cool in response to cold temperatures or stress. In Raynaud's disease, smaller arteries that supply blood to your skin narrow, limiting blood circulation to affected areas.

Women are more likely to have Raynaud's disease. It's also more common in people who live in colder climates.

Treatment of Raynaud's disease depends on its severity and whether you have any other health conditions. For most people, Raynaud's disease is more a nuisance than a disability.

## Symptoms

Raynaud's disease is more than simply having cold hands and cold feet, and it's not the same as frostbite. Signs and symptoms of Raynaud's depend on the frequency, duration and severity of the blood vessel spasms that underlie the disorder. Raynaud's disease symptoms include:

- Cold fingers and toes
- Sequence of color changes in your skin in response to cold or stress
- Numb, prickly feeling or stinging pain upon warming or relief of stress



Raynaud's disease

During an attack of Raynaud's, affected areas of your skin usually turn white at first. Then, the affected areas often turn blue, feel cold and numb, and your sense of touch is dulled. As circulation improves, the affected areas may turn red, throb, tingle or swell. The order of the changes of color isn't the same for all people, and not everyone experiences all three colors.

Occasionally, an attack affects just one or two fingers or toes. Attacks don't necessarily always affect the same digits. Although Raynaud's most commonly affects your fingers and toes, the condition can also affect other areas of your body, such as your nose, lips, ears and even nipples. An attack may last less than a minute to several hours.

People who have Raynaud's accompanied by another disease will likely also have signs and symptoms related to their basic underlying condition.

### **When to see a doctor**

See your doctor right away if you have a history of severe Raynaud's and develop an ulcer or infection in one of your affected fingers or toes.

### **Causes**

Doctors don't completely understand the cause of Raynaud's attacks, but blood vessels in the hands and feet appear to overreact to cold temperatures or stress:

- **Cold temperatures.** When your body is exposed to cold temperatures, your extremities lose heat. Your body slows down blood supply to your fingers and toes to preserve your body's core temperature. Your body specifically reduces blood flow by narrowing the small arteries under the skin of your extremities. In people with Raynaud's, this normal response is exaggerated.
- **Stress.** Stress causes a similar reaction to cold in the body, and likewise the body's response may be exaggerated in people with Raynaud's.

### **Blood vessels in spasm**

With Raynaud's, arteries to your fingers and toes go into vasospasm. Vasospasm narrows your vessels dramatically and temporarily limits blood supply. Over time, these same small arteries may thicken slightly, further limiting blood flow. The result is that affected skin turns a pale and dusky color due to the lack of blood flow to the area. Once the spasms go away and blood returns to the area, the tissue may turn red before returning to the normal color.

Cold temperatures are most likely to trigger an attack. Exposure to cold can be as simple as putting your hands under a faucet of running cold water, taking something out of the freezer or exposure to cold air. For some people, exposure to cold temperatures isn't necessary. Emotional stress alone can cause an episode of Raynaud's.

Raynaud's may be partly an inherited disorder.

### **Primary vs. secondary Raynaud's**

Raynaud's occurs in two main types:

- **Primary Raynaud's.** This is Raynaud's without an underlying disease or associated medical problem that could provoke vasospasm. Also called Raynaud's disease, it's the most common form of the disorder.
- **Secondary Raynaud's.** Also called Raynaud's phenomenon, this form is caused by an underlying problem. Although secondary Raynaud's is less common than the primary form, it tends to be a more serious disorder. Signs and symptoms of secondary Raynaud's usually first appear at later ages — around 40 — than they do for people with the primary form of Raynaud's.

Causes of secondary Raynaud's include:

- **Scleroderma.** Raynaud's phenomenon occurs in the majority of people who have scleroderma — a rare disease that leads to hardening and scarring of the skin.
- **Lupus.** Raynaud's is also a common problem for people with lupus erythematosus — an autoimmune disease that can affect many parts of your body, including your skin, joints, organs and blood vessels.
- **Rheumatoid arthritis.** Raynaud's may be an initial sign of rheumatoid arthritis — an inflammatory condition causing pain and stiffness in the joints, often including the hands and feet.
- **Sjogren's syndrome.** Raynaud's phenomenon can also occur in people who have Sjogren's syndrome — an autoimmune disorder that may accompany scleroderma, lupus or rheumatoid arthritis.
- **Diseases of the arteries.** Raynaud's phenomenon can be associated with various diseases that affect arteries, such as atherosclerosis, which is the gradual buildup of plaques in blood vessels that feed the heart (coronary arteries), or Buerger's disease, a disorder in which the blood vessels of the hands and feet become inflamed. Primary pulmonary hypertension, a type of high blood pressure that affects the arteries of the lungs, can be linked to Raynaud's.
- **Carpal tunnel syndrome.** The carpal tunnel is a narrow passageway in your wrist that protects a major nerve to your hand. Carpal tunnel syndrome is a condition in which pressure is put on this nerve, producing numbness and pain in the affected hand. The affected hand may become more susceptible to cold temperatures and episodes of Raynaud's.
- **Injury due to overuse.** Raynaud's can also be caused by repetitive injuries that damage nerves serving blood vessels in the hands and feet. Some people who type or play the

piano vigorously or for long periods of time may be susceptible to Raynaud's. Workers who operate vibrating tools can develop a type of Raynaud's phenomenon called vibration white finger.

- **Smoking.** Smoking constricts blood vessels and is a potential cause of Raynaud's.
- **Injuries.** Prior injuries to the hands or feet, such as wrist fracture, surgery or frostbite, can lead to Raynaud's phenomenon.
- **Certain medications.** Some drugs — including beta blockers, which are used to treat high blood pressure; migraine medications that contain ergotamine; medications containing estrogen; certain chemotherapy agents; and drugs that cause blood vessels to narrow, such as some over-the-counter (OTC) cold medications — have been linked to Raynaud's.
- **Chemical exposure.** People exposed to vinyl chloride, such as those who work in the plastics industry, may develop an illness similar to scleroderma. Raynaud's can be a part of that illness.
- **Other causes.** Raynaud's has also been linked to thyroid gland disorders.

## Risk factors

Risk factors for primary Raynaud's include:

- **Your gender.** Primary Raynaud's affects women more than men.
- **Your age.** Although anyone can develop the condition, primary Raynaud's often begins between the ages of 15 and 30.
- **Where you live.** The disorder is also more common in people who live in colder climates.
- **Your family history.** Additionally, a family history appears to increase your risk of primary Raynaud's. About one-third of people with primary Raynaud's have a first-degree relative — a parent, sibling or child — with the disorder.

Risk factors for secondary Raynaud's include:

- **Associated diseases.** These include conditions such as scleroderma and lupus.
- **Certain occupations.** People in occupations that cause repetitive trauma, such as workers who operate tools that vibrate, also may be more vulnerable to secondary Raynaud's.

- **Exposure to certain substances.** Smoking, medications that affect the blood vessels and exposure to chemicals such as vinyl chloride are associated with an increased risk of Raynaud's.

## Complications

If Raynaud's is severe — which is rare — blood circulation to your fingers or toes could permanently diminish, causing deformities of your fingers or toes.

If an artery to an affected area becomes blocked completely, sores (skin ulcers) or dead tissue (gangrene) may develop. Ulcers and gangrene can be difficult to treat. In extreme untreated cases, your doctor may need to remove the affected part of your body (amputation).

## Preparing for your appointment

Your family doctor or general practitioner will likely be able to diagnose Raynaud's based on a description of your signs and symptoms. In some cases, however, you may be referred to a doctor who specializes in disorders of the joints, bones and muscles (rheumatologist).

Here's some information to help you get ready for your appointment, and know what to expect from your doctor.

Information to gather in advance:

- **List your signs and symptoms.** Your doctor will want to know when you first noticed these signs and symptoms and what seems to trigger their appearance.
- **Note any other medical conditions with which you've been diagnosed.** Your doctor will be especially interested to know if you've been diagnosed with a disorder commonly associated with Raynaud's, such as scleroderma, lupus or Sjogren's syndrome.
- **Make a list of your medications.** Include any prescription or over-the-counter medications you're taking, as well as all vitamins, supplements and herbal remedies.
- **Write down questions to ask your doctor.** Creating your list of questions in advance can help you make the most of your time with your doctor.

If any additional questions occur to you during your visit, don't hesitate to ask. Some questions to consider include:

- Do I have Raynaud's?
- Is my condition considered primary or secondary?
- Am I at risk of complications from this condition?
- What treatment approach do you recommend, if any?

- What self-care steps can I take to reduce the risk of a Raynaud's attack?
- I have other health conditions. How can I best manage them together with Raynaud's?

### **What to expect from your doctor**

Your doctor is likely to ask you a number of questions. Being ready to answer them may reserve time to go over any points you want to talk about in-depth. Your doctor may ask:

- What are your symptoms?
- When did you first notice these symptoms?
- Have your symptoms changed over time?
- During a Raynaud's attack, do your fingers or toes change color or feel numb or painful?
- Does cold or stress seem to trigger an attack?
- Does anything else seem to bring on your symptoms?
- Have you been diagnosed with any other medical conditions?
- Are you currently taking any prescription or over-the-counter medications?
- Has anyone else in your family been diagnosed with Raynaud's?
- Do you exercise regularly?
- Do you smoke?
- Do you use caffeine?
- What do you do for a living and for recreation?
- How do you manage stress?
- What else concerns you?

### **Tests and diagnosis**

To diagnose Raynaud's, your doctor will ask detailed questions about your symptoms and medical history and conduct a physical examination. Your doctor may also run tests to rule out other medical problems that may cause similar signs and symptoms, such as a pinched nerve.

#### **Sorting out primary vs. secondary Raynaud's**

To distinguish between primary and secondary Raynaud's, your doctor may perform an in-office test called nail fold capillaroscopy. During the test, the doctor examines your nail fold — the skin at the base of your fingernail — under a microscope. Tiny blood vessels (capillaries) near the nail fold that are enlarged or deformed may indicate an underlying disease. However, some secondary diseases can't be detected by this test.

If your doctor suspects that another condition, such as an autoimmune or connective tissue disease, underlies Raynaud's, he or she may order blood tests, such as:

- **Antinuclear antibodies test.** A positive test for the presence of these antibodies — produced by your immune system — indicates a stimulated immune system and is common in people who have connective tissue diseases or other autoimmune disorders.
- **Erythrocyte sedimentation rate.** This blood test determines the rate at which red blood cells settle to the bottom of a tube in the space of an hour. A faster than normal rate may signal an underlying inflammatory or autoimmune disease. Autoimmune diseases are commonly associated with secondary Raynaud's.

There's no single blood test to diagnose Raynaud's. Your doctor may order other tests, such as those that rule out diseases of the arteries, to help pinpoint a disease or condition that may be associated with Raynaud's.

## Treatments and drugs

Self-care and prevention steps, such as dressing in layers or wearing gloves or heavy socks, usually are effective in dealing with mild symptoms of Raynaud's. If these aren't adequate, however, medications are available to treat more-severe forms of the condition. The goals of treatment are to:

- Reduce the number and severity of attacks
- Prevent tissue damage
- Treat any underlying disease or condition

## Medications

Depending on the cause of your symptoms, medications may help treat Raynaud's. To widen (dilate) blood vessels and promote circulation, your doctor may prescribe:

- **Calcium channel blockers.** These drugs relax and open up small blood vessels in your hands and feet. They decrease the frequency and severity of attacks in most people with Raynaud's. These drugs can also help heal skin ulcers on your fingers or toes. Examples include nifedipine (Adalat CC, Afeditab CR, Procardia), amlodipine (Norvasc) and felodipine (Plendil).
- **Alpha blockers.** Some people find relief with drugs called alpha blockers, which counteract the actions of norepinephrine, a hormone that constricts blood vessels. Examples include prazosin (Minipress) and doxazosin (Cardura).
- **Vasodilators.** Some doctors prescribe a vasodilator — a drug that relaxes blood vessels — such as nitroglycerin cream to your fingers to help heal skin ulcers. Your doctor may

also prescribe vasodilator drugs that are commonly used to treat other conditions, but may effectively relieve the symptoms of Raynaud's. These drugs include the high blood pressure drug losartan (Cozaar), the erectile dysfunction medication sildenafil (Viagra, Revatio), the antidepressant medication fluoxetine (Prozac, Sarafem), and a class of medication called prostaglandins.

You and your doctor may find that one drug works better for you than another. Some drugs used to treat Raynaud's have side effects that may require you to stop taking the medication. A drug may also lose effectiveness over time. Work with your doctor to find what works best for you.

Some medications actually can aggravate Raynaud's by leading to increased blood vessel spasm. Your doctor may recommend that you avoid taking:

- **Certain over-the-counter (OTC) cold drugs.** Examples include drugs that contain pseudoephedrine (Chlor-Trimeton, Sudafed).
- **Beta blockers.** This class of drugs, used to treat high blood pressure and heart disease, includes metoprolol (Lopressor, Toprol XL), nadolol (Corgard) and propranolol (Inderal, Innopran XL).
- **Birth control pills.** If you use birth control pills, you may wish to switch to another method of contraception because these drugs affect your circulation and may make you more prone to attacks. Talk to your doctor before stopping the pill.

If you have questions about how best to manage Raynaud's, contact your doctor. Your primary care doctor may refer you to a physician who specializes in treating Raynaud's.

### **Surgeries and medical procedures**

Sometimes in cases of severe Raynaud's, approaches other than medications may be a treatment option:

- **Nerve surgery.** Nerves called sympathetic nerves in your hands and feet control the opening and narrowing of blood vessels in your skin. Sometimes it's necessary in cases of severe Raynaud's to cut these nerves to interrupt their exaggerated response. Through small incisions in the affected hands or feet, a doctor strips away these tiny nerves around the blood vessels. The surgery, called sympathectomy, may reduce the frequency and duration of attacks, but it's not always successful.
- **Chemical injection.** Doctors can inject chemicals to block sympathetic nerves in affected hands or feet. You may need to have the procedure repeated if symptoms return or persist.



- **Amputation.** Sometimes, doctors need to remove tissue damaged from a lack of blood supply. This may include amputating a finger or toe affected by Raynaud's in which the blood supply has been completely blocked and the tissue has developed gangrene. But this is rare.

## Lifestyle and home remedies

A variety of steps can decrease Raynaud's attacks and help you feel better overall:

- **Don't smoke.** Smoking causes skin temperature to drop by constricting blood vessels, which may lead to an attack. Inhaling secondhand smoke also may aggravate Raynaud's.
- **Exercise.** Your doctor may encourage you to exercise regularly, particularly if you have primary Raynaud's. Exercise can increase circulation, among other health benefits.
- **Control stress.** Because stress may trigger an attack, learning to recognize and avoid stressful situations may help control the number of attacks.
- **Avoid caffeine.** Caffeine causes your blood vessels to narrow and may increase the signs and symptoms of Raynaud's.
- **Take care of your hands and feet.** If you have Raynaud's, guard your hands and feet from injury. Don't walk barefoot. Take care of your nails to avoid injuring sensitive toes and fingertips. In addition, avoid wearing anything that compresses blood vessels in your hands or feet, such as tight wristbands, rings or footwear.
- **Avoid workplace triggers.** Avoiding tools that vibrate the hand may reduce the frequency of attacks.

### During an attack: What should you do?

What should you do if you're experiencing an attack of Raynaud's? The first and most important action is to warm your hands or feet or any other affected areas of skin. The following steps can help you gently warm your fingers and toes:

- Move to a warmer area.
- Place your hands under your armpits.
- Wiggle your fingers and toes.
- Make wide circles (windmills) with your arms.
- Run warm — but not hot — water over your fingers and toes.
- Massage your hands and feet.

If a stressful situation triggers an attack, you can help stop the attack by getting out of the stressful situation and relaxing. If you're trained in biofeedback, you can use this technique along with warming your hands or feet in water to help lessen the attack.

## Alternative medicine

Lifestyle changes and supplements that encourage better circulation may be effective alternatives for managing Raynaud's. If you're interested, talk to your doctor about:

- **Fish oil.** Taking fish oil supplements could help improve your tolerance to cold and delay the narrowing of your blood vessels that triggers Raynaud's syndrome attacks.
- **Ginkgo.** Ginkgo supplements could help decrease the number of Raynaud's attacks you have.
- **Biofeedback.** Using your mind to control body temperature (biofeedback) may help decrease the severity and frequency of attacks. Biofeedback includes guided imagery to increase the temperature of hands and feet, deep breathing, and other relaxation exercises. Your doctor may be able to suggest a therapist who can help you learn biofeedback techniques. Books and tapes also are available on the subject.

As with any supplement, be sure to talk to your doctor before adding it to your treatment regimen. Your doctor can warn you if there are any potential drug interactions or side effects of alternative treatments.

Coping with the stress and nuisance of Raynaud's takes patience and effort. Work with your doctor to manage your condition and maintain a positive attitude. The majority of people with Raynaud's respond to treatment.

## Prevention

Raynaud's is a condition that you may need to manage for life once it develops. But there are ways to help prevent attacks:

- **Dress warmly outdoors.** In winter, wear a hat, scarf, socks and boots, and mittens or gloves under mittens when you go outside. Put them on before you go outside. A hat is important because you lose a great deal of body heat through your head. Wear a coat with fairly snug cuffs to go around your mittens or gloves, to prevent cold air from reaching your hands. Wear earmuffs and a face mask if the tip of your nose and your earlobes are sensitive to cold. Run your car heater for a few minutes before driving in cold weather.
- **Take precautions indoors.** Wear socks. When taking food out of the refrigerator or freezer, wear gloves, mittens or oven mitts. Some people find it helpful to wear mittens and socks to bed during winter. Because air conditioning can trigger attacks, setting your

air conditioner to a warmer temperature may help prevent attacks. You may also find it helpful to use insulated drinking glasses.

- **Consider moving to a location with a milder climate.** Moving to a warmer climate may help people with severe Raynaud's. However, Raynaud's can occur even in warmer climates when the temperature decreases.

## References

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