

An almost perfect storm

TODAY weather and feature anchor Al Roker describes his recent battle with blood clots



TODAY anchor Al Roker had a close call with blood clots last Thanksgiving but is recovering with help from doctors and family.



Al Roker is an American television icon. The TV news journalist, producer, and author has been informing and engaging Americans for more than 40 years. The long-time *TODAY* weather and feature anchor and co-host of the 3rd Hour of *TODAY* has won 14 Emmy Awards and numerous other honors over his long career. He also speaks openly about his health challenges, including prostate cancer and a recent life-threatening

bout with blood clots in his lungs and legs. NIH MedlinePlus Magazine talked with him about these challenges, the support he got from his family and friends, and the lessons he has taken from it all.

Please tell us about your recent health challenge with blood clots.

What started as some stomach pains and later trouble breathing after climbing the stairs in my house turned out to be an almost perfect storm. My doctor called with the results of a [CT scan](#) and told me to quickly meet him at the hospital emergency room.



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AI Roker and his wife, Deborah Roberts.

He said they found blood clots in my lungs. Additional CT scans at the hospital showed that I had blood clots in my legs, too. And when they operated to fix the blood clots, they found bleeding ulcers and gallbladder problems. What they were expecting to be a surgery that was only two or three hours long ended up taking almost eight hours. And there was about a 48-hour period where they did not know whether I was going to survive.

When did you realize how serious things were for you?

At the time, I didn't really know how serious things were. And for me, that helped. I was able to concentrate on getting better. It sounds simplistic, but if you think you are not well, then you act like you're not well. So in my mind, I was thinking, "Yeah, I'm sick, but I'm going to get better."

How important was the support of your close family and your TODAY colleagues while you recovered?

It makes a huge difference having family and friends with you and supporting you. My wife (ABC News co-host Deborah Roberts) and my daughters Courtney and Leila were with me every day. Leila spent the first five nights with me at the hospital. Hoda Kotb, my TODAY colleague, was there so often that I think people in the hospital thought she was actually a doctor! And my entire TODAY family were there for me not only at the hospital, but also afterward. The whole crew showed up at my house during the holidays to sing Christmas carols. It was pretty special.

As I recovered in the intensive care unit, I saw that a lot of my fellow patients didn't have anyone visiting them. That showed me what a big difference it makes when you have people supporting you and actively championing your cause.

What are your thoughts about keeping active and the role it played in your recovery?

Being active can take a lot of forms. I walk a fair amount and try to work out. I have a treadmill desk—in fact, I'm talking to you *and* walking right now. I'm not trying to set any world records. I'm not joining any bodybuilding competitions. I just want to have a body that does OK and serves me for however many more years I've got. And my doctor said that being in pretty decent health was really one of the reasons I survived.

I also know that if I feel better physically, my mental attitude will be better. And if my mental attitude is better, I feel better. It's a positive feedback loop. There are just any number of reasons to be active.

What lessons have you taken from your recent health challenges?

It's very cliché, but life is short. And it can change on a dime. We need to practice more gratitude. We need to make sure that the people we care about know how we feel about them. My dad always ended every conversation by saying, "I love you." I always knew where I stood with him. And that was very important. So going through something like this really makes you realize how important it is to be present and grateful for the people in your life.

You have been open in talking about your health challenges. Why is that?

It goes back to my dear friend and former TODAY co-anchor Katie Couric. After her husband died of colon cancer, she had a colonoscopy on television to raise awareness about the importance of getting screened for cancer. You can go through it quietly on your own, but perhaps by being public, you can do some good and make a difference. And if one person gets a test because of something you've done, then some good came out of it. ■



AI Roker has used his broadcast platform to raise awareness of health issues.

“It makes a huge difference having family and friends with you and supporting you.”

The basics of blood clots: What you need to know

Blood clots are a natural and necessary part of healing, but they can sometimes cause serious problems.

What are blood clots?

Blood clots are made of proteins, [platelets](#), and other cells in the blood that thicken and stick together. When you cut yourself, a blood clot forms over the injury. This stops the bleeding and helps the wound to heal. Once the injury heals, your body usually dissolves the clot.

Blood clots can also form inside the body when blood vessels are injured or damaged. These clots can block blood flow to important organs like the heart, brain, and lungs, which can cause serious health problems.



[Watch this video from MedlinePlus](#) to learn more about how blood clots form.

When blood clots go awry

Blood clots can form in your body's blood vessels, which are part of your body's circulatory system.

Clots that develop deep in our blood vessels can break off and travel to other parts of the body. While these clots can form anywhere in the body, they most commonly occur in the arms and legs.

[Deep vein thrombosis](#) is a blood clot that forms in a vein deep in the body. It can break loose and cause a serious problem in the lungs, called a pulmonary embolism.

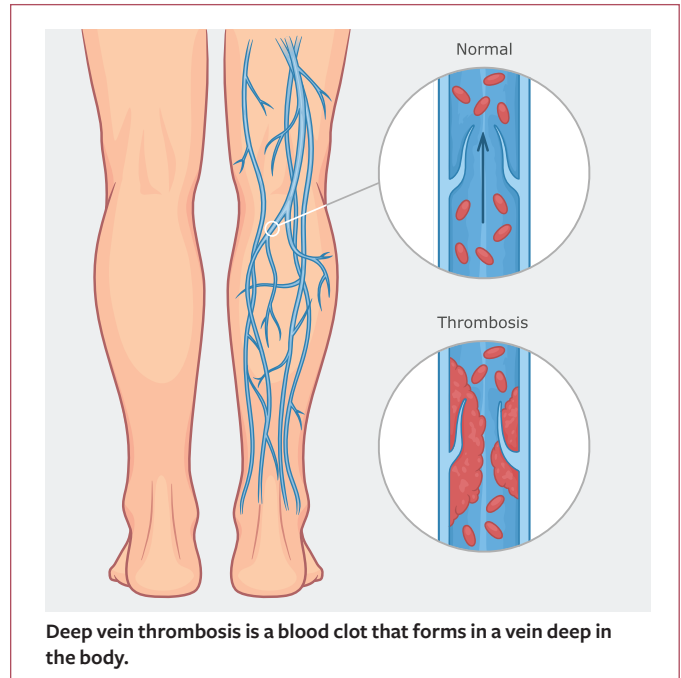
[Pulmonary embolism](#) is a clot within the lungs that blocks blood flow to areas of the lung, sometimes making it difficult to breathe. Pulmonary embolism is a very dangerous condition. It can damage the lungs and other organs in the body and even cause death.

Learn more about [symptoms, causes, and treatments for deep vein thrombosis and pulmonary embolism](#).

What causes them?

Blood clots may form when:

- **There is damage to the lining of blood vessels.** The damage may be caused by an acute injury, surgery and other medical procedures, or other health conditions that cause chronic inflammation.



Deep vein thrombosis is a blood clot that forms in a vein deep in the body.

- **Blood flow is sluggish or slow.** Lack of motion can cause sluggish or slow blood flow. This may occur after surgery, if you're ill and in bed for a long time, or during extended travel.
- **Your blood is thicker or more likely to clot than normal.** [Certain conditions](#) can increase blood's tendency to clot. So can some medical treatments such as chemotherapy (which treats cancer) or birth control pills. Often, blood clots form without any clear cause.

What are some common symptoms?

Blood clot symptoms will vary based on where the clot is located. Many symptoms of blood clots are the same as symptoms of other conditions. You can also have a clot and not experience any noticeable symptoms.

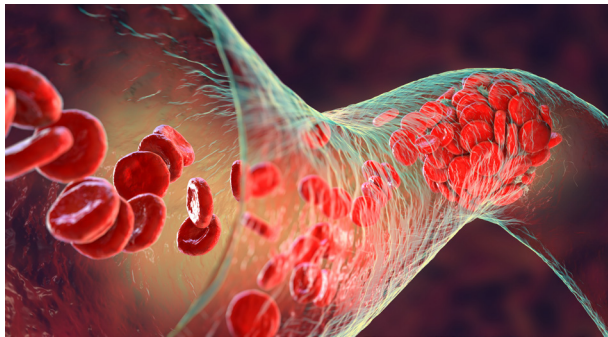
In an arm or leg. If you have a clot in your arms or legs, it could be a deep vein thrombosis. You might experience:

- Pain (either sudden or gradual)
- Swelling
- Tenderness (hurts when touched)
- Warmth or redness

In the lungs. A clot in the lungs (pulmonary embolism) can cause symptoms such as:

- Shortness of breath
- Chest pain (especially with deep breathing)
- Sweating or a fever
- Coughing up blood

In the abdomen. Blood clots can also form in the blood vessels inside the abdomen. They can cause severe abdominal pain and digestive issues (such as nausea and vomiting).



Blood clots can form in your body's blood vessels.

The only way to find out whether you have a blood clot is to get medical help. If you know the warning signs, you're more likely to recognize them and get help as soon as possible.

Who is at risk?

Blood clots can affect anyone, but some factors can increase your risk. They include:

- **Age.** Clots can occur at any age, but people older than 60 are at greatest risk.
- **Family history.** If your family has a history of clots or clotting disorders, you are more likely to develop them.
- **Lack of movement.** Sitting or lying down for a long time (for example, during a long flight or extended hospital stay) reduces blood flow, which increases your risk of clots.
- **Pregnancy and childbirth.** Blood is more likely to clot during pregnancy, making pregnant people more susceptible. This risk can last through the first six weeks after the baby is born.
- **Certain health conditions.** These include cancer (and cancer treatment), heart disease, diabetes, blood disorders, certain autoimmune conditions, and COVID-19.
- **Certain medications.** Some medications can slow blood flow and cause clotting. These include drugs that affect the hormone estrogen (such as birth control pills).
- **Smoking.** Smoking damages blood vessels and makes it more difficult for blood to clot properly.

If you have multiple risk factors, you're even more likely to develop blood clots.

How are blood clots diagnosed?

If your health care provider suspects that you may have a blood clot, they will ask you about your symptoms and medical history and perform a physical exam.

To learn about your medical history, they may ask about:

- Your overall health
- Any prescription medicines you're taking
- Any recent surgeries or injuries you've had
- Whether you've been treated for cancer

During the physical exam, they will:

- Check for signs of blood clots
- Check your blood pressure, your heart, and your lungs

They may also order tests such as a blood test or an imaging test to diagnose a clot or a clotting disorder. These can include:

- **Ultrasound.** This is the most common test for diagnosing blood clots in the arms and legs. Ultrasound uses sound waves to create pictures of blood flowing through the arteries and veins.
- **D-dimer test.** This blood test measures a substance in the blood that's released when a blood clot dissolves. If the test shows high levels of this substance, you may have a clotting disorder.
- **Other tests.** If the doctor suspects a clot in the lungs, they may order additional imaging tests to confirm the diagnosis. These tests provide detailed images of the lungs and can help pinpoint the location of a blood clot.

How are they treated?

[Blood thinners](#) are the most common treatment for blood clots.

These medications help prevent new clots from forming and keep existing clots from getting bigger. However, they can't break up clots that have already formed.

In some cases, doctors may use clot-dissolving medications to break up clots that have already formed. Very rarely, surgery may be necessary to remove a blood clot. These treatments are less common and depend on the type of clot, its severity, and where it's located.

If you have a blood clot, it is important to work with your doctor to develop a treatment plan that is right for you. ■

How to prevent blood clots

Stay active. Exercise keeps your blood flowing, which makes it harder for clots to develop.

Take movement breaks. It's important to move your body regularly, especially during long trips or extended periods of sitting. If you can, get up and move around every 2 to 3 hours.

Stay hydrated. Drink plenty of fluid to keep your blood flowing.

Say no to smoking. Kicking the habit is a win-win for your overall health. And if you don't smoke, don't start!

Maintain a healthy weight. Excess body weight can increase your risk of blood clots. If you're concerned about how your weight might affect your risk for blood clots, talk to your doctor about safe and effective weight management strategies.

Follow the doctor's orders. If your doctor prescribes blood thinners, follow their instructions closely.

Try compression stockings. Your doctor may recommend these to improve blood flow in your legs and arms.

How researchers at the National Heart, Lung, and Blood Institute are unblocking the science of blood clots

Blood clots are a major health problem, but researchers are making progress in understanding and treating them. Blood clots can form when substances in the blood clump together. While this is a normal part of the healing process, sometimes they form without warning and can block blood vessels. This can prevent blood from flowing to important organs such as the lungs, leading to serious health problems.

The National Heart, Lung, and Blood Institute (NHLBI) leads and supports research on blood clots and clotting disorders in the United States and around the world.

How does this research improve our understanding of blood clots and how to prevent, diagnose, and treat them? Here are a few examples:

- **Unraveling clotting disorders.** NHLBI-supported research helped pave the way for understanding and treating certain acquired [clotting disorders](#). These disorders can develop because of another disease or condition such as cancer. Researchers are also studying how blood clots form in the body during [septic shock](#) and investigating new drugs to prevent them.
- **Identifying risk factors for clots and working to prevent them.** Researchers are developing new tools to predict who is at greater risk of blood clots. For example, they are studying how birth control methods that contain hormones such as estrogen affect clotting. They are also looking at how to predict who is likely to develop a dangerous blood clot after a traumatic illness or injury.

Find out more about [NHLBI's contributions to blood clots and clotting disorders research](#).

NIH-supported research is
improving our understanding of
blood clots and clotting disorders.



Recent breakthroughs in blood clots

NIH-funded researchers are making significant progress in understanding and treating blood clots.

A new way to prevent blood clots...that doesn't increase the risk of bleeding

Blood thinners help prevent clots from forming and growing larger. But they come with an unfortunate side effect—they can also cause bleeding. Could a promising new compound address this problem?

MPI 8 is a new compound that blocks a molecule in the blood called polyphosphate, which plays a role in blood clotting. It was [effective at preventing blood clots in mice](#) without causing bleeding. If future research shows that it's safe and effective, MPI 8 could one day help prevent blood clots and reduce the risk of bleeding in humans.

Children with severe blood clots may benefit from shorter treatments

Kids rarely experience blood clots. But when they do, doctors often look to treatments designed for adults, including how long they need to take blood thinners.

Recent research now suggests that in specific situations, [a shorter treatment plan could work just as well for kids](#). This is a promising step toward more tailored treatments for younger patients.

Get involved by joining a clinical trial!

Many [NHLBI studies about blood clotting disorders](#) are currently recruiting participants. Visit [ClinicalTrials.gov](#) to learn more about research happening near you and how to get involved. ■



Meet the Director:



Gary H. Gibbons, M.D.

For 75 years, the National Heart, Lung, and Blood Institute (NHLBI) has studied many different diseases and conditions that are distinct and can intersect. Under Director Gary H. Gibbons, M.D., NHLBI participates in many efforts to tackle heart disease, address long COVID, and reduce health disparities. Dr. Gibbons talked with NIH MedlinePlus Magazine about some of these efforts and his personal interest in cardiology.

What inspired you to go into medicine? What was your journey to becoming a cardiologist?

I was always a very curious kid growing up. I wanted to know how and why things work. My parents were schoolteachers and gave me books for children that would explain scientific concepts like the solar system or why is the sky blue or how your body works. I was blessed to grow up in Philadelphia where they have the Franklin Institute, which is free for children. I could take bus and subway rides by myself and explore that science museum. I think it was that curiosity about how and why things work, and the body is an incredible system. I wanted to know more about it.

I wanted to understand why things go wrong in the body and how that relates to patients and people suffering. Growing up in downtown Philadelphia, you meet people with various illnesses, especially conditions that are common among Black communities. That was the origin of me becoming a cardiologist.

Cardiology is one of those areas in medicine where the patients either were dead and resuscitated or were close to dying. And being a cardiologist, you could take someone who literally couldn't breathe, use your knowledge, and within

“I always wanted to be the kind of doctor that could relieve that suffering. It's what I do today, just on a different scale.”

days or even hours, they could be back to their daily lives. I always wanted to be the kind of doctor that could relieve that suffering. It's what I do today, just on a different scale.

How did you become NHLBI Director, and why were you interested in the role?

That's probably a twisting tale of a journey. My goal in medical school was to become a primary care physician in communities like the one I grew up in. But that trajectory changed when I asked one of my professors, why are African Americans more likely to have high blood pressure and strokes or heart disease as a result? As good professors do, he challenged me to come into the lab and pursue that question. The rest is history.

I spent a summer that turned into two years. I was bitten by the bug of science and that curiosity again. That's what expanded my horizon not only to be a clinician, but to be a cardiologist-scientist. I would not only take care of patients to relieve their suffering. I could also try to understand what's driving the underlying suffering and disease. That put me on a research path and was critical to me becoming an academic who was funded by NIH, then serving on advisory councils and study sections.

Then I became more aware of the impact NIH had beyond any single patient—to better understand heart, lung, blood, and sleep disorders at scale to improve science that will enhance the health of all communities in our nation. It's a higher order of fulfilling the same goals I wanted to do at an individual level.

How does NHLBI balance all the areas under its namesake: heart, lung, and blood conditions?

We are also the home of the National Center on Sleep Disorders Research, so add sleep and circadian biology (the study of your body's 24-hour cycles). We have to be aware of how those conditions are different. But there often are scientific connections between separate NHLBI divisions.

For example, our sickle cell disease initiative is taking advantage of gene therapy and gene editing. The technology exists to take genetic code and manipulate it in a way that can improve human health and prevent disease. That could also apply to lung and heart diseases.

We often rely on statins and other drugs to lower cholesterol. There might even be a way to manipulate genetics to lower an individual's cholesterol for their entire life. Lowering cholesterol can prevent heart attacks, strokes, and other forms of disease. But the potential exists in the future to use these other genetic therapies as an alternative way of reducing the risk of heart disease.

Those are the things that are on the research agenda.

Heart disease has been the leading cause of death in the United States for a long time. Has our understanding of it changed over time, and is there anything we can do to prevent heart disease?

It's important to recognize the tremendous progress that's been made. NHLBI was first established as the National Heart Institute in 1948. That was at a time when heart disease exceeded infectious disease as the number-one killer in the United States. It wasn't understood why middle-aged folks were dropping dead.

One of the first things done was setting up the community-based [Framingham Heart Study](#). That set the stage for how we can study populations and epidemiology. That helped us identify the risk factors that predispose you to heart attacks. It became clear that high cholesterol, high blood pressure, diabetes—all these things were risk factors that promoted heart disease. We also recognized that things like cigarette smoking could affect risk.

That set into motion a number of studies. That's resulted in about a 70% reduction in heart disease over the last 50 years. It's proof of how NIH and NHLBI, through research and discovery, can enhance the health of the nation.

Addressing health disparities in cardiovascular disease is an ongoing part of NHLBI's strategic vision.



FAST FACT

Between 1950 and 2019, deaths from cardiovascular disease in the United States **fell by about 73%.**

SOURCE: [CENTERS FOR DISEASE CONTROL AND PREVENTION](#)

Despite that progress, heart disease persists as the number-one killer. One thing that slows progress is that not all communities have benefited from turning that science into better health care, particularly communities of color, Native Americans, African Americans, populations in rural communities, or those of lower socioeconomic status. They may live in environments where it's difficult to have a healthy lifestyle. They don't have places to walk safely, or they may live in [food deserts](#). Addressing health disparities in cardiovascular disease is an ongoing part of NHLBI's strategic vision.

To that end, we created more heart studies like Framingham in the most vulnerable communities. We're also working in communities to create heart disease interventions for them. The [NIH Community Engagement Alliance Against COVID-19 Disparities](#) program, which takes lessons from the pandemic to support community resilience, is one example.



“Generosity and selflessness motivate us as physicians, but also as a scientist, you need to have that curiosity.”

Another initiative inspired by the pandemic is the [NIH Researching COVID to Enhance Recovery \(RECOVER\) clinical trials for long COVID](#). How is NHLBI contributing to this project?

This is one of the post-viral syndromes we see in medicine. SARS-CoV-2 (the virus that causes COVID-19) is a new virus, and there’s a potential for [patients to develop] long COVID. [They can] suffer from more than 200 symptoms from each organ system in the body. It’s logical for NHLBI to be part of RECOVER because of the vascular effects of COVID-19. Blood clotting is part of how this virus affects the body.

We’re making progress in the RECOVER consortium of institutes across NIH. Nearly 90 publications both in and out of the pipeline are already giving us new insight into what long COVID is and what may be driving it. We also have [clinical trial platforms](#) that are looking at certain symptoms like dizziness and brain fog. We prioritized the symptoms that patients said were the most meaningful to relieve their suffering.

One of the principles of RECOVER was to put the patients at the center of everything we do. Listening to them and their caregivers and reassuring them that this is a new post-viral disorder, that it is real and not in their heads. Patients have been involved from the beginning of the initiative. We want to be sure patients are developing the protocol with researchers.



When he’s not working, Dr. Gibbons likes to enjoy nature.

Extreme weather has affected air quality in new ways. What can people do to protect their respiratory health?

It’s clear and unmistakable that the climate is changing and that it has implications for health. The public is becoming more aware of these issues. It reminds us that we’re all one planet, and that’s key to enhancing our resilience and adaptability from the effect of climate on our health.

It’s not just air quality; heat stress also poses a threat to the cardiovascular system. Climate change also affects water and flooding. That has implications for infectious diseases like the Zika virus that affect blood systems and blood supply.

We need to meet communities where they are in a way that is tailored to the local needs so that people can hopefully take self-protective measures. For example, heat stress in urban areas can cause quite incredible heat differences on asphalt streets and rooftops. This is particularly harmful for older populations. Simple interventions like cooling centers and encouraging communities to protect their elders can help people protect themselves. Children and pregnant women are also vulnerable to climate change. Exposure to air pollution can have lifelong consequences such as developing asthma.

What advice would you give someone who’s interested in becoming a cardiologist?

It’s really helpful to be driven by a sense of compassion. That’s what attracts many of us to become physicians in the first place along with that sense of wanting to relieve the suffering of others. Generosity and selflessness motivate us as physicians, but also as a scientist, you need to have that curiosity. Part of what science does is chip away at our ignorance. For someone like me, who has been in medicine for decades, there are a lot of things I did as an intern that we don’t do anymore. The advances of science are so important to enhancing patient care over the long term.

What do you like to do for fun when you’re not working?

To have a spiritual balance in my life with family and friends is important. I enjoy music—I love jazz and gospel music. And I like to be part of a church that tolerates me singing in a choir. Sometimes going to a park and just being quiet with nature, whether it’s the ocean or the leaves. I feel it.

That’s an important part of maintaining a healthy life and thriving holistically as a person, including for mental health. Have a life of balance and of significance with opportunities for compassion and helping others. We’re learning it actually helps you live longer. ■

When getting warm goes wrong: How to prevent and treat burns

Staying safe around fires and hot liquids

There's nothing quite like a hot cup of cocoa or a slow-cooked meal to soothe the soul on a chilly winter's day. But a simple mistake can turn getting warm into getting burned.

Burns are a common injury that can range from mild to severe. Whether it's a minor kitchen mishap or a more serious accident, understanding types of burns, their causes, and how to treat them can help keep you and your loved ones safe all year round.

Types of burns

A burn is damage to your body's tissues caused by heat, chemicals, electricity, sunlight, or radiation. Scalds from hot liquids and steam, building fires, and flammable liquids and gases are the most common causes of burns.



First-degree burns

What it means:
Only affects the outer layer of skin (the epidermis)

What it looks like:
The skin is red and painful

What might cause it:
Spilling a hot drink on yourself



Second-degree burns

What it means:
Affects the top two layers of skin (the epidermis and the dermis)

What it looks like:
The skin looks wet or moist, and painful blisters may form

What might cause it:
Accidental contact with a hot stove burner



Third-degree burns

What it means:
Affects all three layers of skin (epidermis, dermis, and subcutaneous tissue)

What it looks like:
The skin may turn black, white, or bright red with a leathery appearance

What might cause it:
Getting caught in a fire



Be careful when drinking hot liquids or getting cozy around a fire.

Ouch! I burned myself! Now what?

If you or someone around you experiences a burn, it's crucial to act quickly. Here's a step-by-step guide to treating a burn.

First-degree burns

1. Cool the affected area immediately by running it under cool water or applying a cold, wet compress. Do not apply ice to a burn.
2. Apply petroleum jelly or aloe vera gel a few times a day to help soothe and protect the skin.
3. Consider taking over-the-counter pain medicine (such as acetaminophen or ibuprofen) to ease pain.
4. Protect the affected area from direct heat and sunlight to prevent further damage.

Second-degree burns

1. Follow all first-degree burn treatment steps.
2. Avoid touching or breaking blisters because this can increase the risk of infection.
3. Apply a nonstick bandage if clothing or daily activity might irritate the skin or blisters or if the blisters have broken open.

Third-degree burns

1. Seek immediate medical attention.
2. While waiting for medical help to arrive, cover the affected area in a clean bandage and try to keep it raised above heart level.

How to avoid getting burned

It's likely you'll experience a burn at some point. Accidents happen! However, there are some steps you can take to minimize the risk of burns:

- Prevent spills by keeping hot foods and liquids away from table edges.
- Never leave hot beverages or cooking pots and pans unattended around children or pets.
- Use a spill-proof lid when traveling with hot drinks.
- Prevent spills by not overfilling cups or bowls.
- Warn others when serving hot liquids or dishes.
- Always use oven mitts when cooking or handling hot food or drinks.
- Warn others when household appliances such as stoves or irons are hot. ■

**This article was originally published in February 2022. It was updated in February 2024.*



FAST FACT

73% of burns occur in the home.

SOURCE: AMERICAN BURN ASSOCIATION



DONATE BLOOD. SAVE A LIFE.

Learn about this safe, easy process.

Every 2 seconds, someone in the United States needs blood, and a single donation can save lives. Patients in need rely on people who give blood. Blood donors are true heroes.

Why is blood so important?

Healthy adults have about 5 to 6 liters of blood circulating throughout their body. Each drop of blood contains red blood cells, white blood cells, platelets, and plasma. Blood helps deliver oxygen and nutrients to cells while moving waste to the liver and kidneys. This ongoing process keeps us alive.

Who needs a blood donation?

Patients may need blood to address:

- Heavy bleeding
- Surgery
- Trauma
- Organ transplant
- Cancer and treatment
- Infectious diseases
- Blood diseases
- Gastrointestinal diseases

There's always a need for blood.

Donating blood is always important because blood has a short shelf life and there is constantly a need.

For example, platelets, which help with clotting and can benefit people who don't have enough, can be stored for only 5 to 7 days. Red blood cells, which can benefit people with diseases that cause anemia, can be stored for only up to 42 days.



www.nhlbi.nih.gov/blood

WHO WE ARE

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[NIH MedlinePlus Magazine](#) is a digital magazine that is compiled into printable monthly issues.

NLM provides **free, trusted health information** in this magazine and at MedlinePlus.gov.

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