



‘Why can’t I sleep?!’

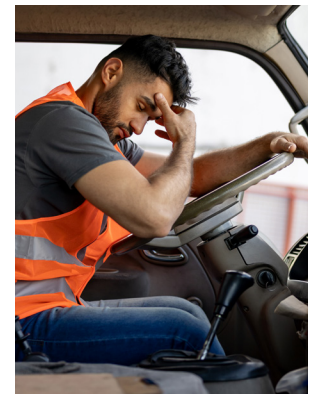
NIH is taking a closer look at why we don’t get enough rest

A good night’s rest does more than energize you—sleep can affect your mood, keep your heart healthy, and help you feel better when you’re sick. But not everyone gets enough sleep every night to feel rested. In fact, about [1 in 3 adults](#) in the United States say they don’t get enough sleep. At the same time, racial and ethnic minorities and people with lower incomes are [most likely](#) to be sleep deprived.

These groups are also more likely to live in segregated neighborhoods or unsafe housing. They are less likely to have access to health care, healthy food, green space, or places to exercise. They are also more likely to live near environmental hazards and experience discrimination. These factors are called social determinants of health (SDOH).

SDOH can cause a lot of stress, and stress makes it harder to get enough sleep. That’s why researchers are looking at SDOH more closely to help people get better sleep.

Marishka K. Brown, Ph.D., Director of the National Center on Sleep Disorders Research (NCSDR), said that people of different racial or ethnic backgrounds of the same socioeconomic status tend to have similar health. But when their living environments change, their health often changes, too. In other words, it’s about place...not race.



Truck drivers, shift workers, and emergency personnel are more likely to work irregular schedules, which can lead to lack of sleep.

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Dr. Marishka K. Brown (left), Director of NCSDR at NHLBI, and Dr. Chandra Jackson, an investigator for environment and sleep research at the National Institute of Environmental Health Sciences, talk about sleep health and the effects of the pandemic. Watch the video [here](#).

“For the longest time, a lot of research focus was on the biology...on the individual,” said Dr. Brown. “We know that’s important; we know those factors contribute to health. We know genetics matter...but it’s not the biggest piece.”

Noisy neighbors and poor air quality can keep you awake

[One way](#) to get enough sleep is to keep bedrooms as dark and quiet as possible. But in urban areas, it may be hard to keep bedrooms completely dark. This can be due to things like streetlights outside or motion-sensor lights for safety reasons. Surrounding noise from the street or neighbors close by can also make it hard to fall and stay asleep.

Another is to keep bedrooms cool, but this can be a problem, too. Big cities can turn into “[heat islands](#)” and become hotter than surrounding towns. That’s due to less tree cover and more pavement or buildings that absorb heat.

“One of the things your body does naturally for sleep is cool itself down,” Dr. Brown said. “But if you are in a space that is 10 or 15 degrees hotter than the surrounding population in the suburbs...those populations are disadvantaged.”

Air quality is also a concern for sleep health because it can cause breathing problems. In urban areas, air pollution can worsen respiratory problems such as [asthma](#), especially in children.

Black children are also [four to six times more likely](#) to have sleep-disordered breathing problems than White children. But this is not due to genetics—it’s tied to living in households with lower incomes and in more environmentally hazardous communities.

Irregular schedules hinder wellness

Sticking to a bedtime routine or sleep schedule is a great way to get enough shut eye every night, but this may not be possible for people who work irregular hours. Shift workers, emergency personnel, health care professionals, and truck drivers are some people who do not always work a regular 9 a.m. to 5 p.m. schedule.

Getting enough quality sleep can also be hard for people who work nights. Your body’s circadian rhythm (a series of physical, mental, and behavioral changes in your body that follow a 24-hour cycle) is very sensitive to light. Staying awake at night and sleeping during the day can [disturb your circadian rhythm](#). This can cause other biological processes such as your immune system to not perform well.

Over time, irregular sleep can lead to diabetes, heart disease, high cholesterol, and obesity. The National Heart, Lung, and Blood Institute (NHLBI) [studied](#) irregular sleep patterns in a group of about 2,000 people ages 45 to 84 and followed them for five years. People with irregular sleep patterns were more than twice as likely to develop cardiovascular disease compared to those with regular sleep patterns. This was even more common among racial and ethnic minorities.

Getting help for sleep problems is not always easy

Access to health care is important for sleep health and wellness in general. Treating underlying conditions may be necessary to get better sleep. For example, if you are not sleeping well, your health care provider may suggest [doing a sleep study](#) with a specialist to see if you have a sleep disorder such as [sleep apnea](#) or [narcolepsy](#).

But for people without health insurance or living in rural areas, seeing a specialist may not be an option.

“Someone in the middle of Iowa who doesn’t have a large academic center anywhere near them is going to have serious challenges with seeing a specialized provider,” Dr. Brown said. “Remote options such as telehealth could begin to break down some of those barriers, but currently they still exist.”

Interest in sleep health research—and in finding solutions to eliminate health disparities—is growing. NCSDR, the National Institute on Minority Health and Health Disparities, and other institutes across NIH are coming together to find connections between sleep and community health.

“It is so enlightening to see the focus on sleep disparities, particularly in the context of social determinants of health,” Dr. Brown said. ■

About 1 in 3 adults in the United States say they don’t get enough sleep.



Ask an Expert

Marishka K. Brown, Ph.D., Director of the National Center on Sleep Disorders Research

Sleep is second nature. But for biomedical research, sleep is a relatively new field of study. Marishka K. Brown, Ph.D., said sleep health research has exploded in the past decade or so. As the Director of the National Center on Sleep Disorders Research (NCSDR) at the National Heart, Lung, and Blood Institute, Dr. Brown talked to NIH MedlinePlus Magazine about the many facets of sleep and why it can be so hard to get.

What role does sleep play in our overall health?

Most people think about sleep as a behavior, like physical activity and diet. It's also a part of basic biology, like breathing. Many consider sleep the “third pillar” of health. Sleep isn't just important—it's *required* for overall health and well-being. Just like air and water, you need sleep. Research in animal models showed that sleep deprivation over several days impacted their survival.

We know sleep does a lot of different things for our physical and mental health and well-being. About a decade ago there was [an amazing research finding](#) that the brain had this process to “wash” or cleanse itself during sleep. And last summer, the American Heart Association [added sleep](#) to its Life's Essential 8™ (previously Life's Essential 7™) checklist of measures to improve cardiovascular health.

How does sleep change during a person's life?

Sleep goes from being necessary for brain *development* to being a part of brain *maintenance* and *repair*. Starting with early childhood, sleep is required for growth of the brain and the overall nervous system. People may not know that certain functions of the brain aren't fully developed until your early 20s. When you are sleep deprived, it impacts that development.

When you think about adolescents, sometimes they are up late at night or parents have to drag them out of bed for school. But that's actually their biology. Teenagers have “delayed phase.” Based on their circadian rhythms, they are more alert later in the night. By the time they are fully formed, mature adults, they get up earlier.

Older adults may get enough hours of sleep, but that sleep is more fragmented. But their sleep may not be continuous; they may get up a lot more at night. They also have “advanced phase,” where they go to bed earlier and they get up in the morning earlier. And sometimes that is natural, but it can be made worse by medication, body changes (such as with the bladder and aging), or a sleep disorder.

What are circadian rhythms?

You have an internal, 24-hour clock that signals physical, mental, and behavior changes in your body—including when you get sleepy. This repeating 24-hour cycle is called the circadian rhythm, and circadian biology is the study of these rhythms.

Circadian rhythms are most sensitive to light. Many people recommend getting bright light early in the morning for better sleep because light cues your circadian biology. If you're not getting the appropriate amount of light at the appropriate time of day, then it essentially misaligns your circadian cues.

Circadian research around health and disease is a growing focus across NIH. For example, scientists are studying how circadian rhythms are affected by what time of day you eat or take medication.

What tips would you give for people trying to get better sleep?

NCSDR's sleep tips for better sleep hygiene are based on research, and their goal is to help people achieve good overall sleep. However, research has shown that while sleep tips are necessary, they may not be sufficient for everyone. Getting bright light early in the morning is one, but so is having consistent sleep

Recommended hours of sleep per night

Ages 3–5 years	10–13 hours
Ages 6–12 years	9–12 hours
Ages 13–18 years	8–10 hours
Ages 18–60 years	7+ hours
Ages 61–64 years	7–9 hours
Ages 65+ years	7–8 hours

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

Types of sleep

Non-REM Sleep



Stage 1: Light sleep; easily awakened; muscles relax with occasional twitches; eye movements are slow.



Stage 2: Eye movements stop; slower brain waves, with occasional bursts of rapid brain waves.



Stage 3: Occurs soon after you fall asleep and mostly in the first half of the night. Deep sleep; difficult to awaken; large, slow brain waves; heart and respiratory rates are slow and muscles are relaxed.

REM Sleep

- Usually first occurs about 90 minutes after you fall asleep, and longer, deeper periods occur during the second half of the night; cycles along with the non-REM stages throughout the night.

- Eyes move rapidly behind closed eyelids.

- Breathing, heart rate, and blood pressure are irregular.

- Dreaming occurs.

- Arm and leg muscles are temporarily paralyzed.

schedules. But there are people working atypical shifts or living in environments that make it extremely difficult to follow proper sleep hygiene. So it's recommended to follow as many tips as you can.

You should have a caffeine cutoff time, if possible. But we know that for several reasons, either social or economic, there are populations for whom this will not really work. Also, have alcohol cutoff times or be mindful of alcohol consumption. Alcohol will put you to sleep, but it also fragments your sleep, and you may feel worse when you wake up.

Exercise is good for whole-body health, but when thinking about your circadian rhythms and when certain hormones are active, there's an optimal time of day to do everything.

You should be mindful of exercise cutoff times—at least 90 minutes or two hours before your bedtime. If you're exercising before your bedtime, you're increasing hormones that signal that it's time to be active.

Is all sleep created equal? Are certain kinds of sleep better than others?

The reason it's recommended to get a certain number of hours per night is because sleep goes through multiple cycles. It takes that many hours to go through all the cycles. If you are shortening that time, you're skipping all these other processes.

When you're talking about all sleep and whether it's created equal, sleep has some variability. It comes back to some of the things we said earlier about the lifespan. Sleep in a 6-month-old is going to be very different from sleep in a 10-year-old. You have more rapid eye movement (REM) sleep in childhood and infancy, and as you go through life, you have less of it. One of the concerns for older adults is because they have more fragmented sleep, they spend less time in "slow wave" sleep. This is critical for learning and memory. If you're not reaching those stages, then that can negatively affect your quality of life.

Are there ways that sleep affects our health that we may not realize?

Research from across NIH has found [relationships](#) between sleep, dementia, and Alzheimer's disease. There's also evidence that circadian rhythms can affect cancerous tumors. And NIH is interested in the links between sleep (or sleep loss) and depression, suicide, and the risk of substance misuse.

It's our mission to share that research and its impact on overall health with everyone. ■



FAST FACT

It's estimated that drowsy driving may be involved in more than **6,000 fatal vehicle crashes** per year.

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



“NCSDR’s sleep tips for better sleep hygiene are based on research, and their goal is to help people achieve good overall sleep. However, research has shown that while sleep tips are necessary, they may not be sufficient for everyone.”

Eczema and the cold

How to avoid flare-ups this winter

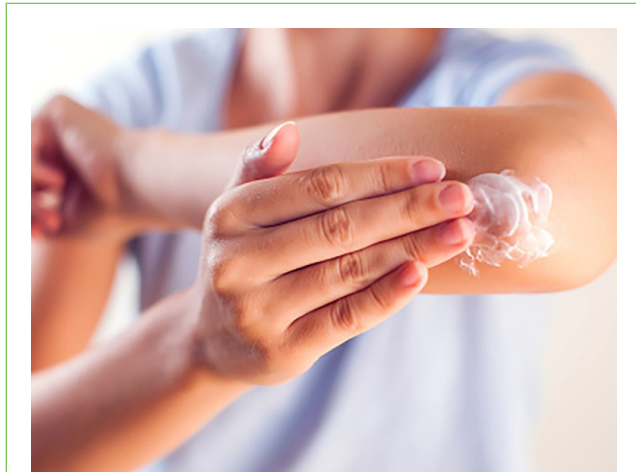
Eczema: What is it?

[Eczema](#) is a skin condition that makes your skin dry, itchy, and inflamed. It can show up as rashes, scaly patches, blisters, or infected skin. It affects about 30% of Americans, [mostly children and adolescents](#). The most common type of eczema is [atopic dermatitis](#).

Eczema is not contagious, but it can cause the skin to become so dry that it breaks open easily. As a result, those who have it may be more likely to get skin infections from bacteria, viruses, and fungi. Symptoms can flare unexpectedly and may need treatment. Managing eczema can be emotional for patients and caregivers.

We don't know what exactly causes eczema, but it seems to be related to the environment, genes, and the immune system. Eczema is also often linked to allergic diseases like asthma, hay fever, and food allergies. In young children, especially babies, eczema is a major risk factor for developing food allergies, particularly peanut allergies.

If you have eczema, speak with your doctor to learn more about treatment options.



If you have eczema, petroleum jelly or thicker creams are good options for moisturizing your skin.

Winter and eczema

Cold, dry air and harsh wind in the winter can trigger a symptom flare-up for those with eczema. Here are some tips to help with those winter flare-ups:

- Use a humidifier.
- Don't take very hot showers.
- Moisturize right after you get out of the shower—petroleum jelly or thicker creams are better.
- Avoid scented lotions and laundry detergents.
- Cover up as much skin as possible when going outside.
- If you know you're going to sweat, wear clothes that will dry quickly.
- Avoid wearing wool, nylon, polyester, or spandex.
- Ask your doctor about prescription medication to help treat stubborn symptoms. ■

**This article was originally published on March 11, 2022. It has been updated to reflect new information.*



FAST FACT

Approximately **30% of children** with eczema also have a food allergy. Studies show severe eczema in young children is associated with increased risk of developing asthma later in life.

SOURCE: [NATIONAL INSTITUTE OF ALLERGY AND INFECTIOUS DISEASES](#)



A letter to our readers...

We're excited to share that starting this year, you can look forward to receiving NIH MedlinePlus Magazine every month by email and as a PDF for those of you who prefer downloadable and easily shareable content. You'll continue to get the same reliable, expert-reviewed articles on diseases and conditions, celebrity interviews, personal health stories, and tips for staying healthy and safe in your environment, plus a few useful resources from NIH. If you're already subscribed to our mailing list, there's no need to do anything—you'll still get all our stories from www.magazine.medlineplus.gov. From all of us at NIH MedlinePlus Magazine, thank you for being a loyal reader and for staying informed about your health! ■



Meet the Director:



Helene M. Langevin, M.D.

Helene M. Langevin, M.D., was destined for a career in medicine. Not only did she grow up around doctors, but she was always curious about how the body worked. In 2018, she became Director of the National Center for Complementary and Integrative Health (NCCIH). NCCIH looks at how mainstream and nonconventional treatments, when used together, can improve [whole person health](#). These treatments can be things like meditation or yoga.

Dr. Langevin talked to NIH MedlinePlus Magazine about her career and what we know about complementary and integrative medicine.

Can you talk about your background and what led you to study medicine?

I come from a family of doctors—there are so many doctors in my family, you can't count them. I practiced internal medicine and was an endocrinologist. That is a doctor that specializes in the system of the body that controls hormones. But before that, in high school in the early 1970s, I had a teacher who taught us basic breathing and relaxation techniques to help us calm down before exams. That stayed with me. I became interested in [tai chi](#), and then I learned about and practiced [acupuncture](#). My interest in complementary medicine came from there.

You've done a lot of research on acupuncture. What about it interested you?

It was curiosity about an experience that I was able to observe myself. When you're taught how to insert an acupuncture needle, you don't just insert it. You manipulate it, you turn the needle around, you pull it up and down, and you feel something. The patient feels something, but the acupuncturist also feels something, like it's grabbing the needle. I didn't understand what that was.



FAST FACT

Acupuncture has existed in some form for **at least 2,500 years** and is part of traditional Chinese medicine. It gained worldwide popularity in the 1970s, and as of 2012, **6.4% of adults** in the United States reported using it.

SOURCE: [NATIONAL CENTER FOR COMPLEMENTARY AND INTEGRATIVE HEALTH](#)

There was this phenomenon that you could see and observe and feel but couldn't explain. I was curious whether this could be measurable. I got funding to create a robotic device to insert the needle, manipulate the needle, and pull it out. It was successful. I ended up studying acupuncture for 25 years. But what I was studying was a basic biomechanical effect...it's the binding of the needle to the connective tissue.

And today, that's what I'm still doing in my lab at NIH—I'm studying how stretching connective tissue affects cells.

Why did you want to become NCCIH's Director?

I became interested in expanding the concept of integrative medicine—specifically considering and treating the whole person, not just one organ or system at a time. After more than 20 years of doing research at the University of Vermont, I became the Director of the Osher Center for Integrative Medicine. The Center is jointly based at Harvard Medical School and Brigham and Women's Hospital in Boston. I also had a lab at the hospital. My role at Harvard was to bring together all the programs in integrative health and medicine into one.

Once I became Director of NCCIH, this idea of whole person health became the central theme of our new strategic plan. So these are themes that I had already started developing before coming to NCCIH.

What does “complementary and integrative health” mean?

“Complementary” means therapies or practices that originated outside of conventional medicine. These are gradually integrated into mainstream health care based on scientific evidence. These therapies used to be called “alternative,” but not anymore. We don't think the term “alternative medicine” is a good idea because these therapies should not be used *instead of* conventional care. “Complementary” is a better term because these approaches can be used *together with* mainstream medicine. Increasingly, the boundary between conventional and complementary treatments is becoming blurred.

For example, if you go to a physical therapist, they may do manual techniques that are similar to what a massage therapist would do. A lot of times these practitioners are cross trained in mainstream and complementary medicine.

At NCCIH, we focus on the concept of “integration.” Integrative health means bringing together approaches that are typically nonpharmacologic (they don’t use drugs) to address the whole person. A lot of times these approaches are used together to address nutritional, psychological, and physical components of health.

How does NCCIH determine whether a complementary medicine is safe or effective? Do you use the same methods as you would to evaluate conventional medicine?

It’s the same principle—all the research we fund has to test a well-defined scientific hypothesis. It needs an appropriate research design and controls, safety measures, statistical analyses, and so on. Typically, when you study a treatment or drug, you study the effects of one molecule on one target. If you’re studying people, you compare the treatment to a placebo (something that mimics the treatment but doesn’t have any active ingredients).

When you’re studying a nonpharmacologic treatment, especially when you combine several at a time, that becomes more complex. We had a workshop at NCCIH on how to do this using cutting-edge scientific methods. We’re starting to understand how to study complex systems and measure how a system changes over time. We’re very excited to use these kinds of methods to study whole person health.



Dr. Langevin enjoys outdoor activities in all seasons.

“I became interested in expanding the concept of integrative medicine—specifically considering and treating the whole person, not just one organ or system at a time.”

How can people find out whether a complementary health provider is reputable or qualified in their field?

Find out where they did their training. For example, ask acupuncturists or chiropractors where they trained, if they have a diploma from an accredited organization, and if they have a license. A lot of the schools that teach integrative therapies help maintain standards in their profession. And many of them are affiliated with research organizations.

Or you can ask your health care provider for referrals to complementary practitioners associated with a hospital or clinic or who they recommend. Make sure your regular health care provider is aware of the integrative care you’re getting. We have [resources on the NCCIH website](#) that can help.

Dietary supplements such as vitamins, minerals, herbs, and other botanicals are a gray area of medicine and nutrition. Where would you direct people to get more information about them?

NCCIH supports the idea that most people can get the nutrients they need from the food they eat. In general, there is no need to take [dietary supplements](#) if you eat a healthy, balanced diet and do not have an underlying health condition that requires vitamin or mineral supplements. There are also botanicals (plants) that people take in the hope of, say, increasing their immune function or to help with sleep or relaxation. This is what we call a *medicinal* use of plants or other natural products. We do not have strong evidence at the moment that botanicals can be used in this way, but we need more research in this area. The NCCIH website [has a great deal of information](#) about these products and the research we have conducted so far.

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

The first thing I do is get outside. It doesn’t matter the weather or temperature. I love to do whatever’s in season. On my mother’s side, everybody is either an artist or musician. I guess I got some of that as well. I like to do watercolors and play the piano, and I find that relaxing. There’s a lot I like to do besides work. ■

To learn more about NCCIH and how to spot health misinformation, check out Dr. Langevin’s full interview online at [NIH MedlinePlus Magazine!](#)

Winter viruses

Steps to stay healthy this winter

While a cold, flu, or COVID-19 can strike at any time, you're more likely to pick up a virus in the winter than other times of the year. The cold, dry air in the winter months provides perfect conditions for viruses to spread. People are also more likely to gather indoors to avoid the cold weather, making it easier for viruses to spread in large numbers.

Prevention best practices

The best way to protect yourself from a virus is to get vaccinated if one is available. But even if you're vaccinated, you should take the following steps to avoid getting sick:

- **Mask up.** Wear a mask in crowded and other public areas where viruses can spread quickly.
- **Wash your hands frequently.** Washing with soap and warm water is still the best way to keep clean, but hand sanitizer is good in a pinch. Just because you don't see any dirt or grime on your hands, that doesn't mean germs aren't there!
- **Disinfect surfaces.** To make sure you're reducing germs, consider using disinfectants like bleach or antibacterial wipes when cleaning surfaces. Some high-touch surfaces to focus on include counters, doorknobs, faucets and toilet handles, light switches, remotes, phones, and toys.
- **Avoid close contact with people who are sick.** If someone you're living with comes down with a virus, try to stay in different rooms as much as possible, use separate dishware, and wipe down shared spaces such as bathrooms. If you must be in the same room, try to keep some distance between one another.



If you have a virus, be sure to stay away from others (especially if you're not wearing a mask).

Access to fresh air also lowers the risk of infection. Air purifiers are great if you have one, and if the weather's warm enough, a cracked window can help fresh air flow into the room.

- **Try not to touch your eyes, nose, and mouth.** Though COVID-19 mainly spreads through the air, many other viruses spread when someone touches a surface with the virus on it and then touches their eyes, nose, or mouth. This can help a virus enter the body.

Steps to recover quickly from an illness

Should you come down with a cold, the flu, COVID-19, or another respiratory virus, here are some tips on how to help care for yourself.

- Avoid close contact with people, including the ones you live with, as much as possible.
- Get tested—knowing what's causing the infection can help inform treatment decisions. Older individuals and those with existing medical conditions should call their doctor if they test positive for COVID-19.

Symptom breakdown

Symptoms	COVID-19	Flu	Cold
Fever/feeling feverish	○	○	Sometimes
Cough	○	○	○
Shortness of breath	○	○	○
Fatigue	○	○	Sometimes
Sore throat	○	○	○
Runny or stuffy nose	○	○	○
Muscle pain or body aches	○	○	Sometimes
Headache	○	○	○
Vomiting or diarrhea	○	Sometimes	Never
Change in or loss of taste or smell	○	Sometimes	Sometimes (from a stuffy nose)
Sneezing	Rarely	Sometimes	Sometimes



- Rest, drink lots of liquids, and take pain relievers as needed for aches and pains. If you have a high fever, your health care provider may recommend over-the-counter pain relievers to help.
- Ask your doctor about prescription antiviral drugs.
- Try using a humidifier or steam to relieve congestion.
- Gargling with salt water can help get rid of mucus in the back of the throat.
- Cough drops and hard candy can help ease a cough or sore throat.
- If symptoms get much worse, consider going to the hospital.

Vaccines protect you and others

Vaccines not only protect you, they also help prevent the spread of disease to vulnerable populations. The flu kills more than 36,000 people and hospitalizes another 200,000 people in the United States each year. And since January 2020, COVID-19 has killed 1.2 million people across the country.

Today's flu vaccines are developed to prevent what scientists believe will be the most widespread flu strain each winter. Earlier this year, [NIH began enrolling people](#) in a clinical trial of a universal flu vaccine developed by scientists from the National Institute of Allergy and Infectious Diseases. If it works, the vaccine could provide long-lasting protection against multiple flu virus strains (and might one day get rid of the need to get vaccinated every year!).

Until then, be sure to get your flu shot every year as well as the COVID-19 vaccine and any recommended boosters. COVID-19 vaccines, which are authorized and approved by the U.S. Food and Drug Administration, are safe, [free](#), widely available, and highly effective at preventing hospitalization and death. The Centers for Disease Control and Prevention advises everyone ages 5 and older to get the first two COVID-19 vaccines and everyone ages 12 and older to get a booster shot.

You can find a local COVID-19 or flu vaccination site by going to [vaccines.gov](#). You can also text your zip code to GETVAX (438829) for information in English or VACUNA (822862) for information in Spanish. ■

**This article was originally published in March 2022. It was updated in November 2023.*

Help your child through winter ear infections

The start of winter often means the worst part of cold and flu season, and with that, the dreaded ear infection. An ear infection is a bacterial or viral infection that affects the middle ear. It happens when the small space between the eardrum and the back of the throat (the eustachian tube) becomes blocked with mucus. This creates pressure inside the ear, which can be painful.

Unfortunately, ear infections affect infants and young children more than others. Their eustachian tubes are smaller and not as slanted. This makes it more difficult for fluid to drain out of the ear.

And because a child's immune system is not as developed as an adult's, it may be harder for them to fight a sore throat, cold, or respiratory infection that can trap fluid behind the eardrum.

Older children and adults can also get ear infections, but they are less common because their eustachian tubes are larger and slanted, so they drain fluid better.

What to look for in your child

If your child is not old enough to communicate pain, here are a few signs to look for:

- Tugging or pulling at the ear(s)
- Irritability and crying more than usual
- Trouble sleeping
- Fever (especially in infants and young children)

- Fluid draining from the ear
- Loss of balance
- Difficulty hearing or responding to quiet sounds

Your child's health care provider can check for an ear infection by using an [otoscope](#). This lighted tool shows redness in the ear, fluid that might be in the ear canal, or (less likely) a rupture in the eardrum.

They will typically ask whether your child has had a runny nose, cough, or fever since the virus or bacteria that cause colds can spread to the middle ear.

What to do

Some ear infections clear up on their own. However, if your child's health care provider prescribes an antibiotic, it's important that your child takes the medicine exactly as it's prescribed. Even if your child feels better before finishing the medicine, they should take it for the full amount of time. This is to prevent the infection from returning. Typical treatment for ear infections lasts seven to ten days.



If your child has repeated ear infections, their health care provider may suggest a [surgical procedure](#) where small tubes are inserted through the eardrums. The tubes improve air flow and prevent fluid backup in the middle ear so that the child can hear better. These tubes usually stay in place for six to nine months until they fall out.

Reducing the risk

Here are ideas to help your child get through winter without an ear infection:

- Stay up to date with all their vaccinations, including the flu shot.
- Wash your and your child's hands frequently.
- Avoid cigarette smoke (studies show that babies who are around smokers have more ear infections).
- Limit your child's exposure to playmates who are sick.
- Avoid baby bottles in the crib (babies drinking from the bottle while lying down could have liquids back up in the middle ear).

What's next?

Researchers sponsored by the National Institute on Deafness and Other Communication Disorders (NIDCD) are exploring vaccines against some of the most common bacteria and viruses that cause middle ear infections. NIDCD also supports research into why some children have more ear infections than others. For example, Native American and Hispanic children have more infections than other racial and ethnic groups. NIDCD is hoping to find out what kinds of measures could lower the risks of infection.

Researchers are also learning more about antibiotic-resistant bacteria called biofilms, which can be found in the middle ear of most children who have had multiple ear infections. If we can kill these biofilms, we could better treat chronic ear infections.

Consider joining a [clinical trial](#) to help scientists develop new ways to treat and prevent ear infections. ■

**This article was originally published on January 14, 2019. It has been updated.*

Hypothermia and frostbite: Easier to develop than you might think

Tips to prevent and treat cold-related health problems

What is hypothermia?

Cold temperatures can cause hypothermia, which occurs when your body temperature drops below 95 degrees Fahrenheit (35 degrees Celsius). Hypothermia can lead to health problems like heart attacks, kidney problems, liver damage, or death.

Warning signs include:

- Shivering
- Exhaustion
- Confusion
- Memory loss
- Fumbling hands

Infants and older adults are especially at risk for hypothermia because they have a harder time regulating their body temperature. Medical conditions in older adults can also

Winter weather means some people, namely infants and older adults, are at greater risk for hypothermia and frostbite.



Covering up when going out in the cold is important to prevent frostbite and hypothermia.

[increase risks](#). Even a small drop in the surrounding temperature or a short time spent outside in the cold can cause a large drop in body temperature in infants and older adults.

And according to the National Institute on Aging, living in a poorly heated home can also cause hypothermia. To avoid developing hypothermia indoors, place a rolled towel in front of doors to keep out drafts, make sure windows are weather stripped or caulked if they have gaps, and keep indoor temperatures above 68 degrees Fahrenheit (20 degrees Celsius).

How to treat hypothermia

If someone has hypothermia, they should seek medical care as soon as possible and take the following steps:

- Get into a warm car or room.
- Remove any wet clothing.
- Warm the core of their body (chest, neck, head, and groin) using an electric blanket or skin-to-skin contact under loose, dry layers of blankets.
- Drink warm, nonalcoholic drinks.

What is frostbite?

Frostbite can happen when air temperatures fall below 5 degrees Fahrenheit (-15 degrees Celsius). In wind chills of -16.6 degrees Fahrenheit (-27 degrees Celsius), frostbite can occur on exposed skin within 30 minutes. Although frostbite can happen anywhere on the body, it typically affects exposed areas like the nose, ears, cheeks, chin, fingers, and toes. During the early stages, you'll likely feel pins and needles in the affected areas, followed by numbness. These areas will eventually turn white and start to appear waxy, hard, and cold to the touch.

How to treat frostbite

If someone thinks they have frostbite, they should seek immediate medical care and take the following steps:

- Get into a warm car or room.
- Try not to walk on frostbitten feet or toes.
- Put the frostbitten area in warm (not hot) water.
- Use body heat, such as an armpit, to warm the frostbitten area.
- Cover the area with a clean cloth—if fingers or toes are frostbitten, wrap each one individually.
- Don't rub the frostbitten area.
- Avoid touching hot surfaces with the frostbitten area.

How to prevent hypothermia and frostbite

To avoid hypothermia or frostbite when going outside in cold weather:

- Dress in layers.
- Wear warm clothing and waterproof shoes to protect your hands, feet, neck, and face.
- Bring plenty of fluids such as water and food high in protein and fat. For short stays outside, bring carbohydrates for quick energy boosts.
- Avoid alcoholic drinks because they make your body lose heat faster.
- Keep moving to stay warm, but don't exhaust yourself.

Be prepared to get out of the cold, wind, rain, or snow as quickly as possible if you notice signs of hypothermia or frostbite.



FAST FACT

Hypothermia doesn't just occur in frigid weather. Living in a home kept **below 68 degrees Fahrenheit (20 degrees Celsius)** can be a risk factor for older populations.

SOURCE: [NATIONAL INSTITUTE ON AGING](#)



Living in a poorly heated home can cause hypothermia. Weatherproof your home by stopping drafts from doors and windows.

How to prepare for a cold-weather emergency

Winter storms and other cold-related emergencies such as power outages can happen fast. It's best to be prepared if you need to take shelter at home or travel to a safe place:

At home



- Make a disaster plan that includes important phone numbers such as for your doctor and pharmacy.
- Keep out cold air by insulating, caulking, and weather stripping your home.
- Gather supplies, including nonperishable food and water, in case you need to stay home for several days without power.
- Have your chimney or flue inspected each year if you plan to use your fireplace or wood stove for emergency heating.
- Install battery-operated smoke and carbon monoxide detectors.

In your car

Keep an emergency kit with supplies such as:



- Extra warm clothing and blankets
- An ice scraper
- A snow shovel
- Cat litter or sand to help tires grip on snow and ice
- Water and nonperishable food
- Jumper cables
- A first aid kit with any necessary medicines
- A pocketknife
- A battery-powered radio, a flashlight, and extra batteries
- Emergency flares or distress flags
- Waterproof matches and an empty tin can to melt snow for water ■

**This article was originally published on February 28, 2022. It has been updated.*

Being outside or even inside in low temperatures has an effect on the body, and inclement weather can make things worse.

Sneezing less with CATNIP

A promising new therapy could someday mean better relief from cat allergies (and maybe other conditions, too!)

Cat allergies affect millions of Americans. They bring a range of uncomfortable symptoms, including stuffy noses, sneezing, scratchy throats, watery, itchy eyes, and itchy rashes. In severe cases, they can make it hard to breathe.

Traditional allergy shots, also called allergen immunotherapy, are a common treatment for cat allergies. These shots slowly make you less sensitive to allergens, which eases symptoms over time. But they can take a long time to work, and they don't work for everyone.

An early-stage study funded by NIH found that a [combination of allergy shots and another medication may treat cat allergies more effectively](#).

A promising treatment

The [CATNIP study](#) was supported by the National Institute of Allergy and Infectious Diseases. It included 121 adults with a history of cat allergies. Participants were randomly assigned to



What are cat allergens, anyway?

Cat allergens are tiny proteins found in cat skin, saliva, and urine. It's the allergens (and not the cat itself!) that can cause allergic reactions in humans who encounter them. Cat dander can still cause allergies even if the cat is not around.

SOURCE: [NATIONAL INSTITUTE OF ENVIRONMENTAL HEALTH SCIENCES](#)



Allergens in cats' saliva can trigger symptoms in people who are allergic.

different treatment groups. One group received a medication called [tezepelumab](#) in addition to traditional allergy shots. The rest got allergy shots alone, tezepelumab alone, or placebo for both (placebos are inactive substances that look like real medicine).

Participants who received the combined treatment had less severe symptoms when exposed to cat allergens than those who got the allergy shot alone. The study also found that some benefits of the combined treatment lasted for at least one year after treatment ended.

How it works

Tezepelumab is a type of medication called a [monoclonal antibody](#). Monoclonal antibodies are immune proteins made in a lab to target specific diseases or conditions in the body. Tezepelumab works by blocking specific signals between the cells that cause allergic inflammation and typical allergic reactions such as itching, sneezing, and runny nose. In other words, it helps relieve allergy symptoms by targeting the source.

Scientists are still studying tezepelumab. They want to know how the drug works inside our cells. This could help scientists better understand what's happening at the cellular level, leading to even more effective allergy treatments in the future. ■

WHO WE ARE

The National Institutes of Health (NIH) is the **nation's premier medical research agency**, made up of 27 different Institutes and Centers. The National Library of Medicine (NLM) at NIH is a leader in biomedical informatics and data science research and the world's largest medical library. [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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