

# NIH News in Health

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## Dealing With Dizziness Getting Help for a Balance Disorder

You need your sense of balance to stand, walk, bend down, drive, and more. If it gets disrupted, you may struggle to work, study, or even do simple daily activities. Balance problems also increase the risk of dangerous falls.

“Balance is really your sixth sense,” says Dr. David Newman-Toker, a neurologist at Johns Hopkins University. “But we’re not usually aware of it, unless it’s broken.”

Many things can affect your balance. Being hungry or dehydrated may make you feel lightheaded. Some medications can make you feel dizzy. Health problems that affect your inner ear or brain can also throw off your balance. These may include infection, stroke, or a tumor.

Usually, a disruption in balance is temporary. But some things can cause long-term balance problems. So how do you know when to be concerned?

“If your symptoms are severe, or last for a long time, that’s an indication to have things checked out,” says Dr. Michael Hoa, an ear, nose, and throat specialist at NIH.



“Pay attention to things that aren’t normal for you.”

You may feel like you’re moving, spinning, or floating, even if you’re sitting or lying still. Or you could feel like you’re suddenly tipping over while you’re walking. You might have blurred vision or feel confused or disoriented.

**Pinpointing the Problem** • Tiny organs in your inner ear form the core of your balance system. They communicate with your brain to give you a sense of your body’s position.

“But your balance system isn’t just your inner ear,” Hoa says. “It’s input from your eyes. It’s your muscles, joints, and spine. It’s your vision.”

That makes balance disorders tricky to diagnose. “A change in any part of the system could contribute to changes in your balance,” he says. “Sometimes that makes it hard to distinguish one balance disorder

from another.”

A new balance problem can sometimes signal a medical emergency, like a stroke. So it’s important to get symptoms checked out as soon as possible.

“The most important things to tell your health care provider are the timing and triggers for your symptoms,” says Newman-Toker. This will help them narrow down the possible cause.

**Common Causes of Balance Problems** • Identifying what’s causing a balance problem can be complicated. Several disorders have similar symptoms.

An infection or **inflammation** of the inner ear can trigger dizziness and loss of balance. This is called labyrinthitis. Inflammation can also affect the nerve that sends signals about balance to the brain. This is called vestibular neuritis.

The most common cause of dizzy spells is called benign paroxysmal positional vertigo, or BPPV. This occurs when tiny crystals in the inner ear fall out of place. BPPV can cause a brief, intense sense of **vertigo** triggered by certain changes in the position of your head. The spells last less than a minute.

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### Definitions

#### Inflammation

Heat, swelling, and redness caused by the body’s protective response to injury or infection.

#### Vertigo

The feeling that you, or things around you, are spinning or moving when they are not.

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A less common, but recurrent, cause of balance problems is Ménière's disease. This can cause vertigo, hearing loss, and a ringing or buzzing sensation in the ear. It's not known what causes this condition. But people living with it often have extra fluid in their inner ear.

To determine what's causing your symptoms, your health care provider can do different tests. These include a hearing exam, blood tests, or tests to measure your eye movements. If these tests can't rule out a stroke, you may also need an MRI scan.

Newman-Toker's team is experimenting with goggles that measure eye movements automatically. They're testing whether the goggles can help doctors in the emergency department make better diagnoses.

Because some balance disorders can look similar, people may not always get the right diagnosis

## Definitions

### Genes

Stretches of DNA you inherit from your parents that defines features, like your risk for certain diseases.

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and treatment on the first try, says Newman-Toker. You may need to visit another doctor or try different treatments before you feel better.

**Finding What Works** • Some balance disorders have straightforward treatments. But others can be tricky. For BPPV, a trained health care provider can perform a series of simple head movements. These move the loose crystals back in place.

Ménière's disease is harder to treat. Lifestyle changes like stopping smoking and eating less salt can sometimes reduce symptoms. New drugs are now being tested to treat Ménière's disease in clinical studies.

Hoa's lab is trying to identify possible causes of Ménière's disease. They're looking at how **genes**, proteins, and the body's disease defense system (the immune system) may be involved. They suspect that what's currently called Ménière's disease may be several different conditions. Pinpointing the differences may lead to more personalized treatments.

But currently, few effective drugs exist for long-term balance problems, says Dr. Anat Lubetzky, a physical therapist at New York University. "For many people, the solution to a balance problem is balance rehabilitation." Rehabilitation teaches you ways to adapt to dizzy spells. It also focuses on strengthening muscles and preventing falls.

"People with balance disorders can enter a vicious cycle of the fear of falling," Lubetzky says. "They may avoid activity, which can then create muscle and bone problems."

That, in turn, can increase the risk of more falls. "You have to gain your confidence back," she says.

Lubetzky is researching the use of virtual reality, or VR, to better understand and treat balance disorders. Many people with balance disorders struggle in environments with a lot of sights and sounds. So



## Wise Choices Living With a Balance Disorder

To help prevent falls and other accidents:

- Avoid walking in the dark, either inside or outside.
- Wear low-heeled shoes or walking shoes.
- Use a cane or walker, if necessary.
- Add handrails to stairwells and bathrooms in your home.
- Stay physically active to improve your balance and strength. A physical therapist can help you learn to exercise safely.
- Talk with your health care provider about whether it's safe to drive.

her lab creates virtual scenes, like subway stations, for rehab sessions. These scenes let people practice walking in small virtual crowds.

As people build their skills, the scenes can get busier and noisier. The team hopes that these programs will help people regain their confidence in busy environments without leaving the safety of the clinic.

Whether it's rehab, medications, or other treatments, it may take time to find something that works for you.

"If things don't go how you've been told to expect them to, be aware that you might actually not have the right diagnosis," Newman-Toker says. You may need to go back to your health care provider or see a specialist.

It may also take time to gain your confidence back. In the meantime, anyone living with a balance disorder—either temporarily or permanently—can also do simple things at home to prevent falls and accidents. See the Wise Choices box for tips. ■



## Web Links

For more about balance disorders, see "Links" in the online article: [newsinhealth.nih.gov/2021/11/dealing-dizziness](https://newsinhealth.nih.gov/2021/11/dealing-dizziness)

# Face Masks and COVID-19

## Protecting Yourself and Others

To fight the spread of COVID-19, many places now require people to wear face masks. But the advice on wearing them has changed over the course of the pandemic. This has led some people to question: Do face masks even protect against COVID-19?

“Yes, absolutely,” says Dr. Adriaan Bax, a biophysicist at NIH. He has been testing how well different types of masks work. Masks, he explains, can help stop the spread of COVID-19 for a few reasons.

First, masks can trap fluid droplets that exit the mouth while you’re speaking. If you have COVID-19, these droplets contain virus that can be inhaled by others.

Bax and his colleagues have shown that just by talking, a person pro-

duces thousands of these little droplets every second. Speaking loudly or singing produces even more droplets.

Stopping droplets at the source is the easiest way to prevent the virus from spreading through the air. Wearing a mask can play a crucial role. Bax and colleagues have found that even a simple cloth mask can stop nearly all droplets produced during speech.

After droplets leave someone’s mouth, the water in them quickly evaporates. This causes the droplets to shrink. These shrunken droplets are called aerosols. They can float in the air for anywhere from minutes to hours. Once the virus is carried in such tiny aerosols, it becomes more difficult to stop.

Masks can also help protect the people wearing them. Studies have found that NIOSH-approved N95 or KN95 masks block aerosols from entering the airway very effectively. Surgical and cloth masks are less effective, but they still provide some protection. How well they work depends on the number of layers, choice of materials, and whether they’re worn properly.

Even if a mask doesn’t block all of the aerosols, it may still protect the wearer against severe disease. Severe COVID-19 tends to occur when virus gets into the lower airway and the lungs.

Wearing a mask may help the body clear out virus from the lower airway before it reaches the lungs. This is because, as Bax’s team has shown, wearing a mask traps the moisture that would otherwise escape when you exhale. This raises the amount of moisture in your airways (or the humidity).

Moisture is essential to promote



the natural clearance process of the airways. This helps keep the lungs free of contamination by dust, pollutants, and viruses. Masks may aid this process by raising the humidity.

“Some may find wearing a mask uncomfortable, especially on hot and humid days. This is largely because of the humidifying effect. But this drawback is very minor compared to the benefit that masks offer,” says Bax.

For most people, cloth masks and surgical masks don’t interfere with normal breathing. Oxygen and carbon dioxide are much smaller than the respiratory droplets that carry the virus and pass easily through masks.

Masks work best when we all wear them. But with any mask, not all virus particles are blocked. That’s why it’s still important to stay a distance from others, generally about six feet. For tips on wearing masks, see the Wise Choices box.

And remember: Getting a COVID-19 vaccine is the best way to protect yourself and others from the virus. ■



### Wise Choices

#### Tips for Wearing Masks

- Choose masks with two or more layers of fabric. A well-fitted N95 respirator provides the most protection.
- Avoid masks with exhalation valves, vents, or other openings.
- Be sure your mask covers both your nose and your mouth.
- Be sure that your mask fits snugly against the sides of your face.
- Wash reusable masks every day or whenever they get dirty. If you have a disposable face mask, throw it away after wearing.
- For teachers and other people whose jobs require lots of speaking, consider using a voice amplifier (which can be found online), so you can be better heard while wearing a mask.
- To stay up-to-date on mask guidance, visit the CDC’s website at [go.usa.gov/xMNQb](https://www.cdc.gov/xMNQb).



### Web Links

For more about masks and COVID-19 and an online-only Q&A, see “Links” in the online article: [newsinhealth.nih.gov/2021/11/face-masks-COVID-19](https://newsinhealth.nih.gov/2021/11/face-masks-COVID-19)





## Health Capsules

For links to more information, please visit our website and see these stories online.

### Parent Smoking Linked to Rheumatoid Arthritis

Rheumatoid arthritis (RA) causes pain and swelling in the joints. It's an autoimmune disease, where the body's immune system attacks your own healthy joint tissue. Experts don't know what causes the disease. Genes, hormones, and factors in the environment may play a role.

Smoking cigarettes is known to increase the risk of developing RA. Researchers recently looked at whether being exposed to second-hand smoke during childhood may also play a role. Scientists analyzed

data from nearly 91,000 female nurses over 28 years. The study also examined the effects of mothers' smoking during pregnancy and living with a smoker as an adult.

Women who grew up in a home where parents smoked were more likely to develop RA as adults. They were 75% more likely to develop the disease. Those who smoked as adults had an even greater risk.

The scientists didn't find any link between smoking during pregnancy and RA. Living with a smoker as an

adult didn't appear to increase RA risk. But many people who live with smokers also smoke, so researchers couldn't draw a firm conclusion.

The study is one of the first to suggest that parents' smoking may directly increase RA risk. "Our findings give more depth and gravity to the negative health consequences of smoking in relation to RA, one of the most common autoimmune diseases," says Dr. Kazuki Yoshida of Brigham and Women's Hospital, who co-lead the study. ■

### Food Safety Tips

Bring on the holidays! But before you start cooking, take a moment to look over some tips on food safety. They can help avoid getting you and others sick.

When preparing food, follow four basic steps: clean, separate, cook, and chill. First, wash your hands, countertop, and cutting board with hot soapy water. Make sure that knives and other cooking utensils are clean. Wash the lids of cans before opening. Rinse fruits and vegetables. (But don't rinse raw meat before cooking. Disease-causing microbes

can splash out of the sink and spread around.)

Next, be sure to separate foods. Keep raw meat, poultry, seafood, and eggs away from foods that won't be cooked. When shopping, put raw meat in a plastic bag. Keep it away from other items in your cart and fridge.

Use a food thermometer when cooking. Make sure that the inside of your food reaches the right temperature to kill bacteria.

Of course, you want to enjoy leftovers. Chill food in the refrige-

rator within two hours of cooking. Store it in clean, shallow containers with lids. Use or freeze within three to four days. And don't let hot foods cool before putting them in the fridge—put them in as soon as possible.

Food-related illness is especially dangerous for people who are older or have health problems. If you follow these steps, you'll enjoy a safe meal. For more tips on food preparation and storage, visit: [www.nia.nih.gov/health/food-safety](http://www.nia.nih.gov/health/food-safety). ■



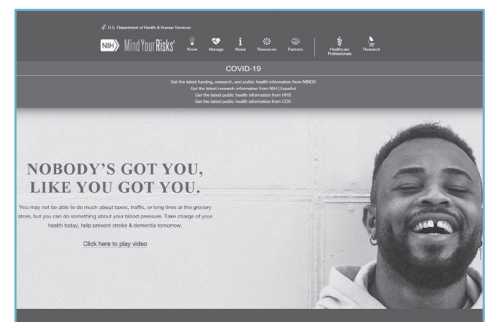
### Featured Website

Mind Your Risks

[www.mindyourrisks.nih.gov](http://www.mindyourrisks.nih.gov)

It's important to control high blood pressure. It is one of the most preventable risk factors associated with stroke and dementia.

Visit this website to learn more about the connection between high blood pressure, stroke, and dementia.



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