

MAYO CLINIC HEALTH LETTER

Reliable Information for a Healthier Life

VOLUME 32 NUMBER 12 DECEMBER 2014

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Nonallergic rhinitis

Another cause of congestion

You've had a runny nose for what seems like months now. At first you thought it was a cold — colds always seem to go around in the wintertime — but it doesn't really feel like one.

You feel congested but have no other symptoms, except for maybe a tickle in your throat. Plus, it's gone on so long it seems like something else.

Could it be allergies? Perhaps.

Allergies — allergic rhinitis, or hay fever — aren't just seasonal. You also can be allergic to indoor allergens, such as mold, dust mites or pet dander.

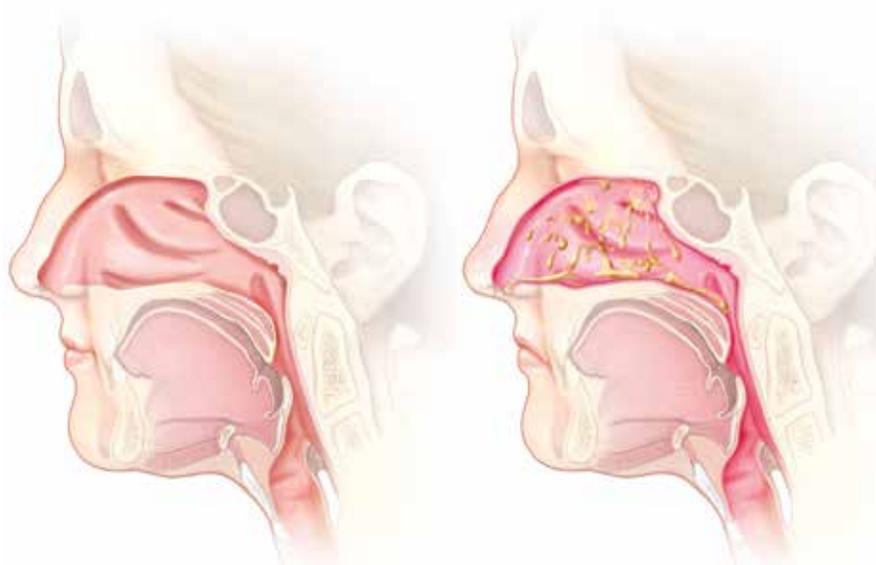
But it could also be nonallergic rhinitis, also called vasomotor rhinitis. The term *rhinitis* refers to inflammation of the mucous membranes in your nose. Nonallergic and allergic rhinitis share many of the same signs and symptoms — sneezing, nasal congestion, a runny nose or mucus in your throat.

The difference is that nonallergic rhinitis doesn't involve your immune system. Instead, it's an irritation of the lining of your nose. As a result, treatments for nonallergic rhinitis and allergic rhinitis differ slightly.

Sorting it out

To diagnose nonallergic rhinitis, your doctor usually starts by making sure your symptoms aren't caused by allergic rhinitis.

Skin prick tests and blood tests can help rule out common allergens —



Allergic rhinitis and nonallergic rhinitis cause many of the same signs and symptoms, including inflammation of the nasal lining, a runny nose and mucus in the throat.

such as dust mites, mold, pollen and pet dander.

Your doctor will also want to be sure your symptoms aren't caused by a chronic sinus infection, a sinus problem related to a deviated septum — the slender partition that separates your two nostrils — or benign growths inside the nose (nasal polyps). For your doctor to get a clear view of your sinuses, you may undergo an imaging test, such as a nasal endoscopy or a computerized tomography (CT) scan.

Sometimes, rhinitis can have both allergic and nonallergic causes. If this is the case, you may need treatment for both conditions.

Finding the trigger

Nonallergic rhinitis occurs when something irritates and inflames the lining of your nose. This causes the blood vessels in your nose to dilate and increase the amount of fluid and blood in the lining of your nose. There are several possible causes for this inflammation. But whatever the trigger, the result is the same — swollen nasal membranes and congestion.

Many things can trigger the nasal swelling in nonallergic rhinitis — some resulting in short-lived symptoms while others cause chronic problems. Nonallergic rhinitis triggers include:

- *Environmental or occupational*

irritants — Dust, smog, secondhand smoke or strong odors, such as perfumes, can trigger nonallergic rhinitis. Chemical fumes, such as those you might be exposed to in certain occupations, also may be to blame. Often, people are aware of what environmental factors trigger their rhinitis.

■ *Weather changes* — For some people, exposure to cold or dry air — or other temperature or humidity changes — can trigger the membranes inside the nose to swell and cause a runny or stuffy nose. Rhinitis due to weather changes is sometimes confused with seasonal allergies.

■ *Complications of a cold* — Colds and the flu are common causes of a runny nose and nasal congestion. Infections like these usually clear up after a few weeks, but can cause lingering mucus in the throat (postnasal drip). Sometimes, this type of rhinitis can become chronic, causing continuous nasal discharge, facial pain and pressure (sinusitis).

■ *Foods and beverages* — Some people find they get a runny nose when they eat certain foods — especially hot or spicy foods. Drinking alcoholic beverages also may cause the membranes inside the nose to swell, leading to nasal congestion.

■ *Certain medications* — Some medications can cause nonallergic rhinitis. These include aspirin, ibuprofen (Advil,

Motrin IB, others), and high blood pressure (hypertension) medications such as beta blockers and alpha blockers. Alpha blockers may also be used for prostate problems. Nonallergic rhinitis also can be triggered by sedatives, antidepressants, oral contraceptives or drugs used to treat erectile dysfunction.

Overuse of decongestant nasal sprays, which you might use to treat congestion, can actually cause even more congestion — a type of nonallergic rhinitis called rhinitis medicamentosa.

■ *Stress* — Emotional or physical stress can trigger nonallergic rhinitis in some people.

Home remedies that work

While the best way to cure nonallergic rhinitis is to avoid whatever is triggering it, this isn't always possible. You might be able to avoid spicy foods

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Mayo Clinic Health Letter (ISSN 0741-6245) is published monthly by Mayo Foundation for Medical Education and Research, a subsidiary of Mayo Foundation, 200 First St. SW, Rochester, MN 55905. Subscription price is \$31.52 a year, which includes a cumulative index published in January. Periodicals postage paid at Rochester, Minn., and at additional mailing offices. POSTMASTER: Send address changes to *Mayo Clinic Health Letter*, Subscription Services, P.O. Box 9302, Big Sandy, TX 75755-9302.

Allergic rhinitis

Allergic rhinitis, or hay fever, produces many of the same symptoms as nonallergic rhinitis, although sneezing and itching are more common. Allergic rhinitis is an immune reaction triggered by allergens, such as pollen, dust, mold and pet dander. If you're allergic to pollen, for example, your immune system typically goes into hyperdrive during the spring and fall because of increased pollen levels in the air. This causes sneezing, a runny nose, itchy eyes and generally makes you feel miserable.

Because allergic rhinitis is so common, it's usually suspected as the cause of runny noses, sneezing and congestion. Treatment for allergic rhinitis often includes the antihistamines cetirizine (Zyrtec), loratadine (Claritin) and fexofenadine (Allegra), which relieve sneezing and itching in addition to having anti-allergic and anti-inflammatory properties.

and perfumes, but you can't always avoid weather changes. And sometimes it's hard to determine what's causing your symptoms.

When triggers are unavoidable, there are a variety of treatments that may help. Finding the right one partly depends on how much the condition bothers you. If your symptoms are mild, try home remedies such as regularly and gently blowing your nose, setting up a humidifier in your bedroom or workplace, and staying hydrated. These steps can help rid your nose of irritants and loosen congestion and stuffiness.

Another home remedy that's very effective is rinsing out your nasal passages with a saline solution. Saline solution is a mixture of salt, baking soda and water. You can find packets of saline powder or a ready-made solution at most drugstores. Or you can make your own solution using 8 ounces of distilled purified water and 1/4 teaspoon each of noniodized salt, such as sea salt, and baking soda.

When you rinse your nasal passages with the saline solution, the salt helps pull fluid out of the swollen nasal lining, shrinking the lining and helping you breathe easier. Rinsing also removes mucus, dirt and dust.

Use a specially designed squeeze bottle, such as the one included in saline kits, or a neti pot, a device used for nasal irrigation that resembles a small teapot. You can use a bulb syringe too, but these are hard to clean, and you run the risk of rinsing your nose with old saline solution and mucus.

To rinse your nose, fill the bottle or neti pot with a fresh batch of saline solution. With clean hands, insert the spout or tip firmly against one nostril. Lean over a sink and gently squeeze the bottle or tip the pot until the solution runs out of your other nostril or your mouth. Repeat with the other nostril.

Be sure to rinse the irrigation device after each use with distilled purified water and leave open to air-dry. You can rinse your nasal passages as often as needed.

Medications that can help

If simple home remedies aren't enough to treat your nonallergic rhinitis, one of the following medications may be of help:

■ **Corticosteroid nasal sprays** — If your symptoms are bothersome, consider a nonprescription corticosteroid nasal spray, such as triamcinolone (Nasacort Allergy 24HR) or fluticasone (Flonase).

Corticosteroid medications help prevent and treat the inflammation that's associated with some types of nonallergic rhinitis. Possible side effects include nose irritation, nosebleed and sore throat.

■ **Antihistamine nasal sprays** — While oral antihistamines don't seem to help nonallergic rhinitis, antihistamine in the form of a nasal spray may reduce symptoms of nonallergic rhinitis.

You may want to try a prescription antihistamine spray such as azelastine (Astelin, Astepro) and olopatadine (Patanase). Side effects may include a bitter taste in your mouth, headache and nosebleed.

■ **Anti-drip anticholinergic nasal sprays** — The prescription drug ipratropium (Atrovent) is often used as a chronic obstructive pulmonary disease (COPD) inhaler medication. But it is also available as a nasal spray and can be helpful if a runny, drippy nose is your main complaint.

Using ipratropium before a meal can prevent a runny nose if food tends to trigger rhinitis for you.

■ **Oral and nasal decongestants** — Oral decongestants may help relieve congestion. However, they're generally considered the second choice for treating nonallergic rhinitis because of possible side effects such as increased blood pressure or sleeplessness.

Nonprescription decongestant nasal drops or sprays (Afrin, Dristan, others) may ease congestion temporarily. However, using them for more than a few days consecutively can lead to a rebound effect, in which the decongestant actually causes more-severe nasal congestion when it wears off. □

Health tips

Vaccinations for grandparents

If you're a grandparent, you'll want to make sure you're up to date on all of your vaccinations to help keep the grandkids healthy. These shots can help keep you healthy and keep you from spreading illnesses to your grandchildren:

■ **Flu (influenza)** — Get this shot every year. It protects against the latest strains of the flu virus.

■ **Tetanus, whooping cough and diphtheria (Tdap)** — These infectious diseases can be especially troublesome for infants and older adults. After your initial Tdap shots, further boosters for adults include one Tdap shot then tetanus and diphtheria (Td) boosters every 10 years.

■ **Chickenpox (varicella)** — If you've never had chickenpox or been vaccinated against the disease, you'll need two doses.

■ **Shingles (zoster)** — One dose of the zoster vaccine is approved for age 50 and older, even if you've had the painful rash before. The same virus causes shingles and chickenpox. It's possible for a baby who hasn't yet been vaccinated against chickenpox to get the virus from exposure to an open shingles rash.

■ **Pneumococcal disease** — Both the PPSV23 and the PCV13 pneumococcal vaccines are recommended for adults age 65 and older. If you've not been vaccinated, it's recommended that PCV13 be given first, with PPSV23 given six to 12 months later. If you've already had the PPSV23 vaccine, PCV13 can be given at least 12 months later. □

News and our views

On the horizon: Better bone-building drugs?

Bone tissue is continuously replaced with new bone tissue in a process called bone remodeling. Remodeling takes place in two basic steps — bone loss (resorption) and bone formation, or bone building. As you age, the rate of bone resorption overtakes bone formation, leading to bone loss that can be serious enough to cause the bone-thinning disease osteoporosis.

Among medications approved for osteoporosis, all but one work by slowing bone resorption. Unfortunately, these drugs also slow bone building. The net effect is that they help you preserve and strengthen the bone you have, while helping you build a small amount of new bone. Only the drug teriparatide (Forteo) helps build new bone. But teriparatide is expensive, it involves daily injections, its use is limited to two years, and after completion it's generally followed by treatment with another osteoporosis medication. That's why the hunt is on for new drugs that can build new bone with fewer drawbacks than teriparatide.

One emerging candidate is odanacatib. This drug blocks the main enzyme (cathepsin K) that causes bone resorption. However, it doesn't seem to also slow new bone formation. Moreover, the drug is taken orally only once a week, and side effects appear to be minimal.

Mayo Clinic bone experts view odanacatib with guarded optimism. Results of early, limited research have indeed been promising. Larger studies are underway. Still, it's too early to get overly excited about osteoporosis drugs under development, as they all have many hurdles to clear before potentially emerging as established therapies. But given the research on odanacatib and other drugs, it's likely that better drug options for osteoporosis will someday be a reality. □

Stimulating, everyday activities keep brain sharp

Growing research suggests that activities that absorb and stimulate your mind may help slow or even prevent the development of mental decline.

A recent study by Mayo researchers found that ordinary yet intellectually stimulating activities such as using a computer, playing games, reading books and engaging in crafts — including knitting, quilting and other types of handiwork — were associated with a 30 to 50 percent decrease in the chances of developing mild cognitive impairment.

Why these activities might help prevent or delay cognitive decline isn't clear. One theory is that mentally stimulating activities help keep the connections between brain nerves intact and even create new ones. Another theory is that these activities may help reduce stress, perhaps carrying benefits similar to those of meditation or mindfulness training.

These activities are similar to meditative techniques that stress the idea of becoming fully aware of the here and now, often by focusing on a repetitive activity such as deep breathing. Such techniques produce a relaxation response, sort of the opposite of the body's stress fight-or-flight response.

The idea that purposeful activities can slow cognitive decline needs to be confirmed in larger, longer term studies. In the meantime, though, Mayo doctors say that these kinds of activities are worth pursuing, as they do no harm and may offer substantial benefits. □

Lifting safely

Protecting your spine

The movers got the large items out of your old house and into your new condo. All that was left was for you to move the smaller boxes. It was an all-day project that was going well — until you lifted a box of books and felt a jolt of pain through your lower back.

There are many potential causes and contributors to lower back pain or injury. Aging contributes to degeneration of tissues of the spine such as vertebrae, vertebral joints and the cushioning disks between vertebrae. Diseases such as bone-thinning osteoporosis can make spine tissues more vulnerable to injury. In addition, muscles, tendons and ligaments in the back can weaken somewhat with age — a process that's greatly accelerated if you lead a sedentary lifestyle with little physical activity.

Added to this list are specific movements — such as lifting or moving heavier objects, especially if done with improper technique — that can cause injury or lead to soreness from overuse.

When it comes to lifting and moving objects without causing injury, your brain is the best tool you have. Safe lifting starts with taking time to analyze a situation — and either performing a lift in a safe manner or recognizing your limits and seeking help. This is particularly important if you have a disease or condition — such as osteoporosis — that heightens injury risk.

Stop to think

Back pain caused by lifting or moving an object can be widely variable in terms of severity and duration. It may be anything from mild soreness that goes away in a few days to severe and debilitating pain that lasts for weeks, months or even longer.

With this in mind, taking your time to assess how you'll approach any lifting is time well-spent if it allows you to avoid pain and disability from an injury.

As you consider how best to lift an object:

- Think about how much the object weighs — or test the object with a light push or tip to get a feel for how much it weighs. Also consider how awkward the object will be to carry.

- Err on the side of caution and underestimate your capabilities in terms of lifting or moving an object. If you don't think you can move the object yourself, or if you think that moving the object will put you at even a slight risk of injury, think of alternatives. Solutions include finding someone to help you, using a tool such as a moving dolly or cart to help with the job, sliding or rolling something across the floor rather than picking it up, or breaking the load down into smaller units that are easily manageable. The idea is to work smarter, not harder.

- If you determine that lifting can be done safely, take time to plan your movements. Plan a way to complete the task without twisting your torso or putting your body in an awkward position while lifting. In addition, look at where you are and where you want to go. Make sure the route is clear of obstacles or hazards that could cause you to trip. You may want to establish a spot, such as a table or chair, where you can place the object if you need a rest or need to change your grip or positioning.

- When handling objects with others, make sure everyone involved understands the direction and purpose of the necessary movements. Discuss the task plans step by step and designate someone to “coach” the lift so that movements are coordinated.

- If your muscles aren't warmed up before the lift, take time to move around,

get the blood flowing and gently limber up muscles that you'll be using for lifting.

Lift mechanics

When the actual lifting and carrying take place, be mindful of your body positioning by:

- Trying to maintain your spine's natural curve by starting all movements with your feet and moving your body as one unit.

- Avoiding bending or twisting at the waist while lifting or holding objects. Rather than twisting, turn by moving or pivoting your feet.

- Holding objects centered and close to your body when carrying them, and using both hands when possible.

- Inhaling before lifting an object and exhaling during the lifting phase. Holding your breath while lifting can lead to dangerous blood pressure increases. □

Lifting techniques

The kneeling method:

1. Kneel close to the object with your feet shoulder-width apart. Tighten your core muscles — including the muscles in your abdomen, back and pelvis — as you prepare to lift.

2. Maintain the natural curve in your lower back as you lift the object between your legs. Rest the object on your bent knee as you prepare to stand.

3. Use your leg muscles to rise slowly from the floor and maintain the natural curve in your lower back. It's very important to avoid holding your breath.

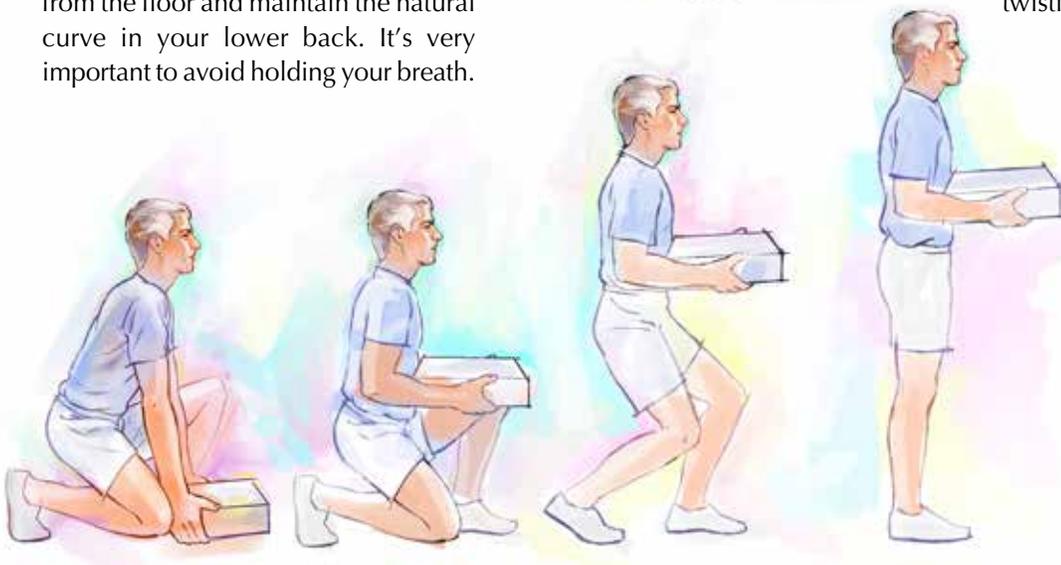


The squatting method:

1. Stand as close to the object as possible, positioning it between your knees as you squat.

2. As you stand, be careful to hold the object close to your body. Maintain the natural curve in your lower back and keep your core muscles tight.

3. Continue holding the object close to your body. Keep your core muscles tight. Turn by pivoting your feet, not twisting your back.



Breathe better

Tips for home oxygen therapy

If you have a chronic lung disease, long-term home oxygen therapy can help you feel better, be more active and think more clearly. It can decrease your risk of complications, such as heart and blood vessel problems, as well as the need for hospitalization.

Some people require lifetime oxygen therapy. For others, it's a temporary therapy after an acute event or surgery. Here are tips on how to maximize the benefits of oxygen therapy.

Consider portability

It used to be that oxygen was delivered to your home in large, steel tanks, and you had to stay close to the storage unit to be connected to it. These days, oxygen sources are easier to use, lighter and much more portable. The old stationary sources are still very useful because they can hold a larger amount of oxygen, but more-portable options mean you can be more active.

Traditional portable oxygen sources include lightweight canisters of liquid oxygen or compressed gas. The liquid oxygen is turned to gas before you breathe it in. Carrying cases ranging from backpacks to wheeled containers allow you to bring these canisters of oxygen with you wherever you go.

Liquid oxygen containers are more compact than are gas containers, so they last longer, but liquid oxygen can evaporate over time. Liquid oxygen containers must be properly ventilated so that they don't freeze up, making the oxygen inaccessible. Finally, if liquid oxygen leaks from a canister it can cause frostbite if it contacts skin.

Alternatively, there's a portable oxygen concentrator — a machine that draws oxygen from the air. Oxygen concentrators require a power source — either rechargeable batteries or a power adaptor.

As another option, some stationary oxygen concentrators have transfilling systems that allow you to take oxygen from the concentrator and transfer it in pressurized form to a portable cylinder, allowing you independent access to portable oxygen whenever you want.

If your portable oxygen container is more than you can carry, ask your home equipment provider for a cart that can be pulled along beside you. Both stationary and portable equipment require regular maintenance to function properly. Be sure to stay on schedule with your home equipment provider.

Maximize comfort

To breathe in the oxygen, most people use a nasal cannula — a tubing system that runs between your nostrils and the oxygen source. The tubing system consists of two small prongs that rest in your nostrils and connect to tubes that drape over your ears and merge under your chin.

This method is convenient, but breathing the dry gas through your nose may irritate your nasal passages, causing a dry or bloody nose. This can be especially true during winter or in drier climates. Ask your doctor about using a nasal spray to moisten your nasal passages, or a water-based lubricant, such as K-Y jelly, on your nostrils. Avoid petroleum-based products, such as Vaseline, because they can be a fire hazard in the presence of oxygen.

You may also be able to add a humidifier to the stationary oxygen unit in your home, to decrease the drying effects of the oxygen.

If your nasal cannula is uncomfortable, talk to your home equipment provider. Your provider may be able to find you a device that fits you better or provide accessories, such as foam or pads to cushion the portion of the tube that goes around your ears.

Follow your prescription for oxygen therapy exactly. If you're experiencing fatigue, headaches or confusion, tell your doctor. Your doctor may need to adjust your oxygen flow rate.

Be safe

Oxygen itself isn't explosive, but it can quickly accelerate a fire, even from just a small ember or spark. Avoid any type of open flame while using oxygen. Don't smoke and avoid people who are smoking. A flick of ash mixed with concentrated oxygen can rapidly turn into large flames.

Avoid flammable materials such as petroleum products; rubbing alcohol; gasoline; paint thinners; cleaning fluids; aerosol sprays, including bug spray and sunscreen; and oil- or alcohol-based face creams or hair products. Sparks from electrical appliances such as razors and hair dryers can be hazardous when oxygen is in use.

Evidence also suggests that facial hair can be a fire hazard when combined with oxygen therapy. While experimenting with mannequins, Mayo Clinic doctors found that facial hair increases the risk of home oxygen therapy-related burns. Mustaches, beards and the like can act as kindling when exposed to a spark from a grill, appliance or even fireworks.

Store oxygen containers in a well-ventilated area — not in a closet, behind curtains or under clothes. Oxygen containers release small amounts of oxygen over time. If the oxygen builds up in a small space, it can be a fire hazard. □



Drugs with aging

Misperceptions about medications

Using medications appropriately and safely can be tricky for people of any age, and it often becomes even more challenging for older adults.

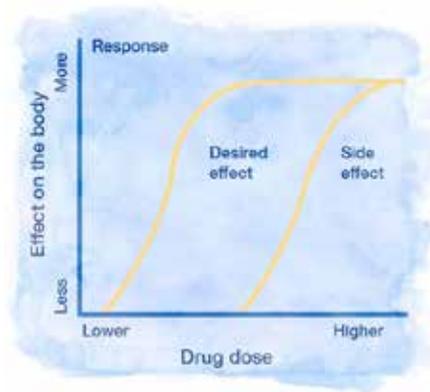
For one thing, older adults are more likely than are younger adults to be taking more than one drug at a time. Multiple drugs tend to be more difficult to keep organized, and interactions between drugs can cause side effects that might not occur if a drug were taken alone. In addition, physical changes in older adults can alter the effectiveness and side effects of a drug, compared with what a younger adult might experience.

Although doctors and pharmacists take special precautions when dealing with older adults and drug prescriptions, it pays to be vigilant for yourself and for loved ones in terms of drug safety. Use the following myths and facts to correct common misperceptions about medications:

MYTH — If a drug works well at a certain dose, taking more will have a better effect.

FACT — The effect of many drugs follows a drug-dose response curve. In simple terms, when you take a prescribed dose of a drug, its beneficial effect increases to a certain level, then plateaus. Meanwhile, the risk of side effects or toxicity from taking the drug often starts off low with a low dose, then rises with higher doses. With many drugs, the benefit won't increase after a certain dose, but the risks will.

For example, taking two acetaminophen (Tylenol, others) pills gives you a certain level of pain relief with minimal risk of side effects. However, taking four acetaminophen pills doesn't provide additional pain relief, but it greatly increases the risk of harmful side effects



and toxicity. Taking too high of a dose of some drugs can be especially harmful in older adults, as diminished liver and kidney function with age means reduced ability to process (metabolize) and eliminate a drug. This may result in accumulation of a drug in your system at high levels for prolonged periods of time.

MYTH — I've been taking a drug at a certain dosage for years, so the new side effects I feel now can't be from that.

FACT — Even if the drug and the dosage remains the same, your body may not. With increased age, you're likely to experience significant changes in your body. Your body weight may change, as may the ratio of lean muscle mass to fat. Your digestion, circulation, and kidney and liver function may all slow down. These changes affect the processing, circulation and excretion of drugs, and can make a drug more or less effective than it may have been for you in the past.

In addition, adding one or more drugs to your previous prescription, or use of nonprescription drugs, herbal or dietary supplements, or alcohol can lead to interactions and possibly new side effects.

MYTH — My doctor never told me when to stop taking a drug, so that means I should just keep taking it.

FACT — Despite best efforts, communication of details about drugs you take can sometimes get lost in the shuffle. This may be especially true if you see more than one doctor or utilize more than one pharmacy.

Whenever you're prescribed a drug, be sure to get answers — in writing — to the following questions:

- What types of laboratory tests or follow-up appointments are needed to monitor therapy, if any?
- How and when do I take this drug, and for how long?
- What should I do if I miss a dose or another problem arises?

In addition to the regular care you receive, ask your doctor or pharmacist once a year to specifically review the drugs you take for possible adjustments to your prescriptions — and in particular if there are any drugs you take that could be discontinued.

MYTH — It's obvious when something is a side effect of a drug or a symptom of a disease or condition.

FACT — Side effects of certain drugs can be mistaken for diseases or conditions associated with aging, or even for symptoms that are simply chalked up to "getting older." Side effects of certain drugs also can worsen symptoms of an existing disease or condition.

Drugs that often aren't well tolerated by older adults are those with an "anticholinergic" effect. These include tricyclic antidepressant drugs and certain antihistamines, nausea medications, muscle relaxants and drugs for incontinence. Side effects of these drugs can include blurred vision, glaucoma, drowsiness, constipation, dry mouth, loss of coordination, urinary retention — particularly in men who have enlarged prostates — and confusion or memory problems.

Doctors and pharmacists can refer to lists of drugs that are recommended to avoid or use with caution in older adults. Still, no list can account for every variation in biology and circumstance from one person to the next. Therefore, it's important for you, your doctor and your pharmacist to keep in mind the possibility that any symptom — or signs of "old age" such as weakness, drowsiness, confusion, anxiety or memory loss — could be a drug side effect. □

Second opinion

Q I've had a cough and some wheezing that won't go away. My doctor suspects asthma and ordered an exhaled nitric oxide test. Can you tell me more about this test?

A Asthma is usually diagnosed based on symptoms, a physical exam and certain tests — such as peak flow measurement and spirometry tests — to see how well your lungs are working. But sometimes the diagnosis is still uncertain. To gather more clues, your doctor may use an exhaled nitric oxide test. This simple test takes only a few minutes and can be performed in your doctor's office or a lung function laboratory.

Asthma causes a particular inflammation of airways in your lungs. Studies have shown that an elevated exhaled nitric oxide — a gas that's expelled when you breathe out — is a reliable marker for asthma airway inflammation.

Nitric oxide is produced throughout your body, including your lungs, to fight inflammation and relax constricted muscles. If your airways are inflamed — as often occurs with asthma — your body may increase its production of nitric oxide. Generally, the higher the level of exhaled nitric oxide, the greater the inflammation in the airways.

To do the test, you breathe into a mouthpiece attached with a tube to an

electronic device. As you breathe out steadily, the device measures the level of nitric oxide exhaled. To make sure results are accurate, your doctor may ask you to avoid certain activities — such as eating, drinking, smoking and exercising — a few hours before the test. The test can be used to diagnose asthma, as well as to fine-tune and maintain asthma control.

If your nitric oxide levels are very high, your doctor may prescribe a steroid or other medications to decrease airway inflammation. Checking your levels again at a later date can help determine how treatment is working. □

Q I had gastric bypass surgery for weight loss, and I take a multivitamin to prevent nutrient deficiency. How do I know if the multivitamin is doing an adequate job?

A Some forms of obesity surgery shorten the amount of small intestine available to absorb nutrients. This can cause diminished nutrient absorption leading to vitamin and mineral deficiencies. Taking vitamins as recommended by your doctor offsets diminished absorption. However, this may not be enough. Nutrient deficiencies your doctor may test for include:

■ **Iron** — A blood test called serum ferritin measures the amount of iron stored in the body. If serum ferritin is low, additional tests of red blood cells may be considered.

■ **Calcium and vitamin D** — Testing bone alkaline phosphate levels is a way to measure the rate of turnover of bone tissue. Turnover that's too fast may

indicate lack of calcium absorption or vitamin D deficiency.

Elevated levels of parathyroid hormone may be another sign of calcium deficiency, especially if it's caused by vitamin D deficiency. On occasion, testing the amount of calcium in urine is performed to help determine if dietary calcium is adequate.

■ **Vitamin B-12** — Deficiency in vitamin B-12 is fairly common among older adults without malabsorption issues, and even more common in those with malabsorption issues. Taking a proton pump inhibitor also can deplete vitamin B-12.

■ **Protein** — Blood testing for a protein (albumin) made by the liver helps determine in some cases if you are at risk of malnutrition.

■ **Others** — Although less common, levels of vitamins A, B-1 (thiamin), B-9 (folate), C, E and K or minerals such as zinc and copper, also may be tested. □

Have a question or comment?

We appreciate every letter sent to Second Opinion but cannot publish an answer to each question or respond to requests for consultation on individual medical conditions. Editorial comments can be directed to:

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MC2019-1214
101214

Printed in the USA