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Hidden dental dangers that may threaten your whole body

Tooth decay and gum disease can lead to serious health problems, including brain or heart infections.

A growing number of older adults have something to smile about: research shows they're keeping their teeth longer. While that makes chewing and talking easier and staves off malnutrition and the discomfort of dentures or missing teeth, it also means you need to be more vigilant than ever about preventing dental problems—including some that can have life-threatening complications.



Gum disease and tooth decay can lead to potentially life-threatening complications.

Tooth decay

One in five adults ages 65 or older has untreated tooth decay (a cavity). This develops when food and bacteria form plaque that sticks to teeth and produces toxins that break down a tooth's outer layer (enamel).

Bacteria also can infect the root of the tooth and form a small pocket of pus (an abscess). "If the infection doesn't find a way out, it may travel to another space in the head. It wants the path of least resistance, so it may infect the jaw. But it can also travel to the brain and cause death, although this is fortunately rare," warns Dr. Lisa Thompson, a geriatric dentistry specialist at the Harvard School of Dental Medicine.

Gum disease

Two out of three adults ages 65 or older have gum disease (also called periodontal disease). This is inflammation of the gums that can lead to tooth loss and many other

problems. The disease starts with plaque buildup that irritates the gums. This early stage (gingivitis) causes swollen gums that bleed easily.

If untreated, gingivitis can extend below the gum line. The body's own immune system is thought to fuel the condition, as white blood

cells—called to attack the bacteria—eventually damage gum tissue as well. "It can infect the gums all the way down to the ligament that holds the teeth in the bone, penetrate the ligament, destroy bone, and cause tooth loss and abscesses," Dr. Thompson says. At worst, bacteria from gum disease may get into the bloodstream and infect the heart valves, a potentially deadly complication.

People with gum disease are more likely to have high blood pressure, diabetes, rheumatoid arthritis, osteoporosis, Alzheimer's disease, and pneumonia—although it is not proven that the gum disease actually causes these conditions.

Older adults face increased risks

Maintaining good oral health gets harder as we age. Sometimes that happens because we've suffered declines in other abilities. "You might have arthritis and decreased manual dexterity. That can make it difficult to brush or floss your teeth or properly care for dentures if you have them," says Dr. Thompson.

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ASK THE DOCTOR

by ANTHONY L. KOMAROFF, M.D., *Editor in Chief*

Can you explain the red meat debate?

Q *Just before the holidays, I heard that a study said it was okay to eat red meat. Previously, you've said just the opposite. Help!*

A We got lots of letters like yours. The bottom line is that we stick by our longstanding advice: avoid frequent meals of red meat, and especially processed meat.

Most of the studies that have been done to determine the effects of nutrition on health are called observational studies: large numbers of people are followed for decades, and they record what they eat and what illnesses they experience.

The weakness of observational studies is this: if you find, for example, that people who eat more red meat also have more heart attacks, you can't be sure that there's not some other factor besides red meat that caused their heart attacks. But statistical techniques can account for the effect such factors might have.

The recent controversy was caused by a self-appointed panel (only two members of which described themselves as true nutrition experts) that pulled together the results of over 100 previously published studies involving six million people.



Avoid frequent meals of red and especially processed meat.

The studies actually did show that people who ate less red meat and processed meat had significantly lower rates of diabetes, heart disease, and cancer, and lower rates of death from heart disease and cancer. But since the panelists regarded observational studies as “weak,” they didn't put much credence in those findings. Also, they argued that the heart disease rates were not that much lower in meat avoiders.

However, if you apply the numbers they came up with to the entire population of the United States, it comes to an awful lot of people who wouldn't get heart disease if they avoided meat.

When it comes to nutrition, the best kind of study would be a randomized controlled trial (RCT) in which people are assigned at random to eat one type of diet or another. This is really hard to do. Imagine telling a thousand people to eat red meat on a regular basis for 20 years, and another thousand to avoid red meat every day for 20 years—and imagine monitoring them for 20 years to be sure they ate as you wanted them to. Pretty hard to pull that study off, right?

There is one large RCT of the fats in red and processed meat that found no connection to heart disease, but in my opinion this study didn't follow enough people for long enough to get definitive results.

In short, I don't think these studies provide a reason to change our advice to minimize eating red meat and processed meat. I have red meat at most one or two times a week, and processed meat rarely—like a hot dog on the Fourth of July. ♥



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What to do about incidental findings

They often lead to follow-up appointments and more testing.

Modern medical imaging saves lives: it can find a blocked artery, a bulging blood vessel, or a suspicious mass. But many times, an x-ray, CT scan, MRI scan, or ultrasound exam looking for one kind of problem can reveal an anomaly that's unrelated and unexpected. Such incidental findings can lead to more testing, more medical bills, and a great deal of anxiety.

"Frequently radiologists will point out something and say it's probably benign, but recommend an MRI. Once you've been told something might be abnormal, you might feel nervous until you know what it is," says Dr. Suzanne Salamon, associate chief of gerontology at Harvard-affiliated Beth Israel Deaconess Medical Center.

Examples

Incidental findings can show up in just about any part of the body, such as the brain, thyroid, lungs, kidneys, liver, pancreas, adrenal glands, or ovaries.

An incidental finding might be a nodule or tumor (abnormal growths that may be benign or malignant) or a cyst (a fluid-filled or debris-filled sac). "For



Tests looking for one type of health condition can often reveal another potential health issue.

example, the doctor may order a chest x-ray in a person with a bad cough, to look for pneumonia, but the radiologist finds a nodule instead. It may be totally benign, or it may be cancerous," Dr. Salamon says. Even if the chance that the nodule is cancerous is very small, there is still a lot of anxiety and pressure to do further testing to be sure it's not cancer.

What happens next?

The next steps depend on the shape, size, and location of the incidental finding. "There's no way to generalize it," Dr. Salamon says. "We have guidelines spelling out the sizes of cysts and nodules in each part of the body that require

follow-ups." The guidelines are based on good scientific studies, but they're not perfect: sometimes a cyst or nodule that the guidelines recommend testing further turns out to be nothing, or a cyst or nodule that did not warrant further testing turns out to be serious.

Coping with consequences

Unfortunately, incidental findings can create hardship, including physical harm from invasive tests (such as biopsies), psychological harm (stress and anxiety), financial burdens, and strains on relationships (see "Consequences of incidental findings: Latest research").

Most often incidental findings on imaging tests don't represent anything serious. If it is a simple cyst, it likely won't require any specific follow-up. For other findings, the radiologist may recommend a repeat test in three to six months, or even longer. But if your doctor urges you to get a follow-up test:

Schedule it now. The sooner you have answers, the better.

Listen to your doctor. "If the doctor is reassuring you that the results are probably going to be benign, try to focus on that," Dr. Salamon suggests.

Try to be positive. "If the tests do show you have a serious condition, at least you'll be finding it early," Dr. Salamon says, "which means you'll have a better chance for successful treatment."

Our take

Medicine began using x-rays more than a century ago, but CT, MRI, and ultrasound have been around only about 50 years. These technologies have greatly improved diagnosis—particularly by catching bad diseases early—and even improved treatments by enabling doctors to guide a needle or scalpel more precisely.

Yet, like many beneficial inventions, they can have a downside. Doctors are working to improve the ability of these technologies to distinguish potential serious problems from irregularities that are of no concern. ♥

Consequences of incidental findings: Latest research



In a recent Harvard survey of almost 400 internal medicine physicians across the United States, published online Oct. 16, 2019, by *JAMA Network Open*, the doctors reported that pursuing incidental findings caused their patients psychological harm (68%), physical harm (16%), and financial burden (58%)—and also caused the patients wasted time and effort (69%), frustration (53%), and anxiety (45%). "As

many as 22% of physicians reported dealing with incidental findings weekly, calling patients or ordering tests," says Dr. Ishani Ganguli, lead author of the study and an internal medicine specialist with Harvard-affiliated Brigham and Women's Hospital. Yet sometimes pursuing an incidental finding saved a life.



Helpful or harmful? Weighing last resorts before knee surgery

You've tried nearly everything for your worn-out knee. But the remaining possibilities may include some risky options.

Knee osteoarthritis affects about half of us in older age. The cartilage that acts as a cushion between the bones wears away, and it hurts when the bones grind against each other. In many people, arthritis can become severe enough that they consider a knee replacement. Since surgery is an expensive and complicated option, you may wonder what else you can do to reduce knee pain. Beware: some treatments are bogus and even dangerous.

Stay away from these

The first sign that a knee pain treatment isn't the best choice: an ad promising that it's the surefire solution.

One such treatment is an implanted shock absorber. Several are on the market. "They don't work. There are a lot of different products that haven't been tested with good scientific research, especially new products. Avoid them," says Dr. Scott Martin, an associate professor of orthopedic surgery at Harvard Medical School.

Another treatment to skip: prolotherapy, an injection of an irritant such as glucose into the knee, which supposedly stimulates the body to start the healing process. "There is nothing in scientific literature to support it. It's just sugar water," Dr. Martin says.

Some clinics offer injections of ozone (the same gas that surrounds the earth) or add ozone to prolotherapy injections, claiming that it repairs cartilage and bone. But ozone is toxic and extremely dangerous to humans, banned by the FDA in medical treatments, and should be avoided.

Another questionable treatment: injections of stem cells into the knee. Stem cells have the ability to transform into other types of cells, and it's thought



Before you seek a treatment for your knee pain, make sure it has solid science behind it.

that stem cells might regenerate damaged joints.

Dr. Martin says we don't know yet if the approach helps, and there's not a lot of science to support it. Plus, treatment is not covered by insurance, and it can be extremely expensive, up to \$40,000. It also poses risks such as infection or fracture if someone is inexperienced in techniques of harvesting cells from the bone. If you're interested in this approach, Dr. Martin advises avoiding local stem cell clinics and going only to an academic research center doing an investigational study.

A mixed bag

Some treatments have mixed results. One is acupuncture, the Chinese technique that involves inserting hair-thin needles into nerve junctions. It's safe, as long as it's done by a certified acupuncturist. But studies disagree on how well it works for knee pain. "It won't hurt you, but you have to believe it'll work. The will to be healed is half the healing," Dr. Martin says.

Another treatment that may help: knee injections of platelet-rich plasma (PRP), a concentrated solution of platelets extracted from your own blood. Platelets contain proteins called growth factors that are thought to stimulate the body's healing response. But PRP

is expensive (hundreds or thousands of dollars per treatment), and insurance doesn't cover it. "Studies show PRP does seem to have an anti-inflammatory effect," Dr. Martin says, "but there's not a lot of hard evidence it provides sustained relief."

The over-the-counter supplements glucosamine and chondroitin may reduce pain. "They work for about 50% of patients," Dr. Martin says. "It doesn't restore cartilage, but studies show it seems to help relieve pain."

More reliable

The gold standard to treat osteoarthritic knees: lose weight and strengthen your muscles (especially the quadriceps in the thighs) with physical therapy. Both steps can take pressure off your knees, which reduces pain. But it can be hard to shed pounds, and sometimes knee pain is so severe it prevents someone from doing physical therapy.

To get to a point where they can exercise, many people turn to injections of steroids (to reduce inflammation) or hyaluronic acid (to supplement the fluid that naturally lubricates the joints). "Two large randomized studies show no difference in pain relief using hyaluronic acid versus steroids. The steroid seems to work better when you have inflammation," Dr. Martin says. "The effects are temporary but in some patients can give significant relief."

When to seek knee replacement

Dr. Martin suggests delaying surgery as long as possible, after you've exhausted the scientifically approved options. "But at some point, when it's physically, mentally, and emotionally wearing you down, it's time to get a knee replacement," he says. "You want to do it before your health precludes you from getting it done, especially if you're on a downward spiral, and before you lose your independence." For more information, check out the Harvard Special Health Report *Knees and Hips* (www.health.harvard.edu/KH). ♥



5 common medications that can have serious side effects

Report new symptoms immediately if you take one of these.

Taking blood thinners and prescription painkillers such as opioids can have potentially life-threatening complications. But many medications—even over-the-counter drugs—have the potential for dangerous side effects. “In most cases, the risk of serious side effects is very rare—much less than 1% of the time,” says Dr. Joshua Gagne, a pharmacist and epidemiologist with Harvard-affiliated Brigham and Women’s Hospital.

If you’re taking any of the following drugs, learn the rare risks.

1. ACE inhibitors

Angiotensin-converting enzyme (ACE) inhibitors—such as captopril (Capoten), lisinopril (Prinivil), and ramipril (Altace)—are prescribed to lower high blood pressure. The drugs help the body produce less angiotensin, a chemical that narrows blood vessels.

The rare risks: ACE inhibitors may trigger an allergic-type reaction called angioedema, a rapid swelling under the skin that can lead to swelling of the throat and tongue and difficulty breathing. “It could show up on the eyelids or around the mouth, or it may occur with hives on the chest,” Dr. Gagne says.

2. Diabetes medications

Metformin (Glucophage, Riomet) is one of the most common treatments for type 2 diabetes. It decreases the liver’s production of glucose (sugar that provides energy to cells), makes cells more sensitive to the hormone insulin (which moves glucose into cells), and decreases the absorption of glucose from the intestine. “It can cause upset stomach and diarrhea, but that usually goes away with continued use,” Dr. Gagne notes.

The rare risks: Metformin may cause lactic acidosis, an accumulation of

lactic acid in the blood that can lead to hypothermia (low body temperature) and a drop in blood pressure. Symptoms include muscle pain, severe abdominal pain, unusual fatigue, and fast breathing.

3. Statins

Statins, such as atorvastatin (Lipitor), simvastatin (Zocor), rosuvastatin (Crestor), and lovastatin (Mevacor), help lower “bad” LDL cholesterol and have been shown to reduce the risk of heart attack, stroke, or death. “About 10% of people who take statins can get muscle aches. It’s not serious, but it causes people to stop taking statins,” Dr. Gagne says.

The rare risks: Statins may cause a potentially life-threatening breakdown in muscle cells, which can overwhelm the kidneys with muscle proteins, causing the kidneys to fail.

4. Over-the-counter painkillers

Acetaminophen (Tylenol) and nonsteroidal anti-inflammatory drugs (NSAIDs) such as ibuprofen (Advil, Motrin) or naproxen (Aleve) are often the go-to drugs for fevers or headaches, and NSAIDs are also used for body aches.

The rare risks: Large daily doses of acetaminophen—more than 3,000 milligrams—can damage the liver and lead to liver failure. Drinking alcohol while taking acetaminophen can also cause liver damage. Long-term and even short-term NSAID use is linked to ulcers, stomach bleeding, kidney problems, high blood pressure, and increased risk for heart attack or stroke.

5. Fluoroquinolone antibiotics

A class of antibiotics called fluoroquinolones, such as ciprofloxacin (Cipro) and levofloxacin (Levaquin), were once popular medications to treat sinus and



Inquire if the risks of potentially dangerous side effects outweigh a drug’s benefits.

urinary tract infections. They are prescribed less often today because of side effect concerns.

The rare risks: Since 2008, the FDA has been warning about the drugs’ potential risks for irreversible side effects. First it was tendon ruptures, then peripheral neuropathy (numbness and tingling from irritated nerves), and more recently (2018) damage to the aorta, the body’s main artery. “I’m not convinced about the risk for aortic damage,” Dr. Gagne says. “I’m studying it now with a group at our hospital.”

How to stay safe

If your doctor prescribes any of the medications we’ve described, ask why it’s necessary and whether the risks are warranted. In some cases, such as taking statins, the benefits typically outweigh the risks. Muscle pain is annoying, and there is rare risk of muscle cell breakdown causing weakness and kidney injury. “But coming off a statin and then having a major heart problem is also a bad outcome. If you experience muscle pain, talk to your doctor about changing to a different statin or a lowering the dose,” Dr. Gagne says.

Be sure to take your medications as prescribed. Also, follow dosage rules for over-the-counter painkillers, unless your doctor advises otherwise.

And stay vigilant about watching for new symptoms. Any sudden side effects you experience—such as abdominal pain, breathing difficulty, hives, swelling, or muscle cramps—should be reported to your doctor immediately, and may require a trip to the emergency department. ♥



Groin strain vs. hernia pain: How to tell the difference

The pain is similar, but hernias often create a telltale lump beneath the skin.

If you're an active person, you may attribute pain in the lower abdomen or groin to a muscle strain, especially if you experienced that kind of injury when you were younger.

Once you're older, it's more likely that groin pain is the result of a hernia—abdominal fat or part of the intestine poking through a hole in the abdominal wall. “In the vast majority of older adults, it's usually a hernia,” says Dr. David Berger, a colorectal and gastro-intestinal surgeon at Harvard-affiliated Massachusetts General Hospital.

You may have a hard time telling the two apart. “There's very little difference in symptoms. You may have a dull ache in the groin or burning pain or a heaviness when you stand,” Dr. Berger says.

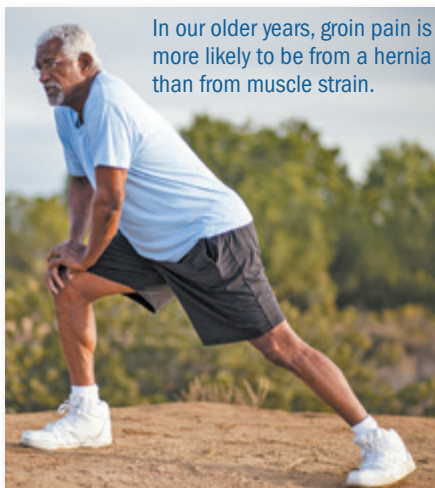
Groin strain

The groin area includes your lower abdomen and upper thighs. Here, about 30 muscles, tendons (which attach muscles to bones), and ligaments (which support organs or connect bones) come together at your pelvis. A sudden, twisting move or change in direction, such as a quick turn while aggressively playing tennis, can overstretch or tear one of the groin muscles or tendons.

Groin strains commonly occur in the upper thigh muscles, such as the adductor longus muscle that helps your thigh move from side to side, or in one of the tendons that attaches the adductor to the pelvis. Also vulnerable are the abdominal muscles that attach to the pelvis, such as the internal oblique muscle.

You typically notice when a strain occurs, and you may even feel a popping sensation with immediate pain that can last for days or weeks. Eventually it gets better.

These kinds of injuries are sometimes called “sports hernias.” But that's a misnomer. “It's not a hernia; it's a strain, and it usually occurs in high school, college, or middle-aged athletes,” Dr. Berger notes.



Inguinal hernia

The abdomen is covered by a wall of muscle. A hole in this muscle wall is called a hernia. This can occur near an incision, the belly button, the upper stomach, or (most often) the groin area.

When a structure from inside the abdomen—typically fatty tissue or a loop of intestine—protrudes through a hole in the abdominal wall into the groin, it's called an inguinal hernia. The displaced part feels like a lump in the groin area (something you won't feel with a groin injury).

Hernia pain may come and go, but the hole in the abdominal wall won't heal on its own.

Prevalence and causes

The idea of body parts poking out of your abdomen may be unsettling, but hernias are quite common. “One in three men will get an inguinal hernia,

and one in 10 women will get one,” Dr. Berger says. “If you have an inguinal hernia on one side of your body, the chance is just as high—one in three for men, one in 10 for women—that you'll get a hernia on the other side, too.”

You may hear that heavy lifting contributes to the formation of this kind of hernia, and Dr. Berger says that's sometimes true. “But hernias can also just happen over time from wear and tear. It doesn't mean you did anything wrong,” he points out.

Other factors that can play a role in inguinal hernia development include

- ▶ a family history of hernias
- ▶ genetics
- ▶ frequent coughing.

Inguinal hernia risks

Sometimes you can push a hernia back into place, but that won't fix the hole in the abdominal wall. Fat or intestine will poke out through the hole again when you stand up.

Over time, the hernia will continue getting larger. It may cause more discomfort and perhaps keep you from being active.

The biggest risk from an inguinal hernia is strangulation—a condition in which the tissue or intestine poking through the abdominal wall becomes trapped and squeezed, cutting off its blood supply.

“This is an emergency. The bowel caught in the hernia can die, and this could be life-threatening. It causes severe groin pain, nausea, and vomiting, and you need to call 911,” Dr. Berger warns. “You'll need surgery quite soon.”

Groin pain treatment

If you experience groin pain or feel a lump in your groin area, report it to your doctor. You may need to go in for a visit. In the doctor's office, you can expect a physical exam and questions about your medical history. Your doctor might order an imaging test.

If your doctor determines that you have a groin strain, he or she may

prescribe rest, ice, and compression wraps. You may need anti-inflammatory medications. Once you feel better, you may benefit from a course of physical therapy to strengthen the abdominal and thigh muscles.

If your doctor determines that you have a hernia, don't assume that you'll need surgery. "Unless the hernia is trapped, you don't have to have it fixed. We can observe it, and we may never have to operate," Dr. Berger explains. "But ask yourself if it limits your activities or keeps you from exercising. If it does, it may be better for you to have the hernia repaired so you can continue your activities."

Hernia surgery

Hernia repair can be done with traditional "open" surgery (through an incision large enough to enable the surgeon to see the hernia) or with a minimally invasive procedure (in which the surgeon works using long, thin tools and a miniature camera inserted

through tiny incisions). Dr. Berger says both approaches are equally effective. The type of surgery you have depends on your circumstances and your doctor.

During the operation, the doctor will close the hole in the abdominal wall by either stitching it shut or by placing a mesh patch over the opening. Mesh patches pose some risk of infection, "but the mesh is pretty safe," says Dr. Berger. And patching has advantages: "The likelihood of a hernia recurrence after a mesh repair is 1% to 3%. If mesh is not used, the recurrence rate is 5% to 8%. I encourage most people to have mesh," he says.

Recovering from surgery takes a few days to two weeks. Your doctor will want you to get up and move around as soon as possible. "You can move right away and get back to your normal routine. The more you do, the faster you'll get better," Dr. Berger says.

Be proactive

To prevent groin strain, exercise regularly and keep your abdominal and



Stretching and staying limber will help prevent groin strain, no matter what your age.

leg muscles strong. It is important for older people to remain as limber as possible. Stretching and yoga are good activities.

While you can't prevent hernias, you can be aware that they are a common cause of groin pain and something you should report to your doctor if you experience symptoms.

"There are more undiagnosed hernias in older adults than in young people, because in older age, we tend to downplay things," points out Dr. Berger. "But like any medical issue, it's important to take it seriously." ♥

Dental dangers ... from p. 1

Another challenge: age-related physical changes in the mouth. The gums start to recede, exposing more of your teeth and creating new spaces that floss doesn't always reach. The teeth become less sensitive as the nerves inside them shrink and a secondary layer of dentin (porous material beneath the enamel) develops.

"You may not feel the same amount of pain in the tooth if there's a problem, and it can progress before you realize it," Dr. Thompson points out. And years of wear and tear can leave your teeth weakened or cracked and vulnerable to dental problems.

Chronic conditions also play a role in oral health. Uncontrolled diabetes can make gum disease worse. And many medications cause dry mouth. "You need saliva—which contains fluoride and electrolytes [like sodium and calcium] and moistens the mouth—to



Adding an interdental brush to your routine can help you remove more debris from your teeth.

help clean and protect the teeth," Dr. Thompson says. A lack of saliva can lead to tooth decay in as little as three months after dry mouth begins.

What you can do

By staying on top of oral hygiene, you can ward off cavities and even reverse gingivitis. But it's going to take extra effort now. These steps can help keep your mouth—and the rest of you—healthy:

- ▶ Brush your teeth at least twice a day and floss at least once. If you're still not removing enough debris, Dr. Thompson recommends adding an interdental brush to your routine. "It

has a little cone-shaped bristle that fits between the teeth," she explains. "You can find it in the toothbrush aisle of any pharmacy."

- ▶ If you have dry mouth, ask your dentist about a prescription toothpaste or mouth rinse with fluoride to help protect against cavities. Chewing gum with xylitol may also stimulate saliva production, which can help protect against cavities.
- ▶ If you find brushing difficult because of arthritis, try an electric toothbrush or a toothbrush with an ergonomic handle.
- ▶ Avoid smoking, which is a risk factor for gum disease.
- ▶ If you have dentures, be sure to brush them daily and soak them overnight in a denture cleaner.
- ▶ Don't skip check-ups and cleanings at your dentist's office (at least two to four times per year, depending on your gum health). ♥



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Consider this Harvard finding before you toast the New Year

We've reported before that heavy drinking is tied to an increased risk for developing dementia. A Harvard-led study published online Sept. 27, 2019, by *JAMA Network Open* suggests that the risk is even worse if you have mild cognitive impairment (MCI). Researchers analyzed the data of more than 3,000 dementia-free adults (average age 78, some with MCI) who reported their alcohol use and underwent psychological testing for six years. People with MCI who drank heavily (more than 14 drinks per week) had a 72% higher risk for dementia than people who drank less than one drink per week. However, people

without MCI who drank moderately (seven to 14 drinks per week) didn't appear to have an increased risk for dementia, and even seemed to have a 37% lower risk for dementia compared with people who consumed less than one drink per week. The bottom line: "Our results suggest that moderation is the healthiest approach if you drink. And if you have mild cognitive impairment, you may want to reconsider drinking alcohol at all," says Dr. Kenneth Mukamal, a study author and researcher with the Harvard T.H. Chan School of Public Health.



First medication to treat uncontrolled nasal polyps

People with troublesome nasal polyps and chronic sinusitis have a new option for relief. In June 2018, the FDA approved dupilumab (Dupixent), the first treatment for resistant nasal polyps and sinusitis. Nasal polyps, which are benign growths in the nasal cavities, affect about 20% of people with chronic sinusitis. Polyps can increase drainage and congestion, cause pain, and diminish smell. Until now, the only ways to try to shrink polyps have been the long-term use of corticosteroid nasal sprays, a short-term course of oral steroids, sinus irrigation, antibiotics, or surgery to remove them. But those methods don't work for everyone, and surgery



doesn't keep polyps from recurring. Dupilumab is an injectable drug that blocks the immune system from overreacting and causing inflammation. "The polyps just seem to melt away. I usually recommend it for patients whose polyps come back after surgery, who can't have surgery for other reasons, or who have bad asthma," says Dr. Alice Maxfield, an ear, nose, and throat specialist at Harvard-affiliated Brigham and Women's Hospital. Dupilumab does have potential side effects, including serious allergic reactions or eye problems (such as conjunctivitis). The drug is extremely expensive, about \$37,000 per year. However, Medicare covers most costs.



Harnessing CRISPR to stop viruses

A research team from Harvard reports that it has harnessed the powerful gene editing tool called CRISPR to recognize and kill viruses. The findings were published online Oct. 2, 2019, by *Molecular Cell*. CRISPR can alter strands of both DNA and RNA (a molecule related to DNA), which are built like strings of beads. Each bead consists of one of four chemicals called bases. CRISPR can recognize a specific sequence of bases (such as one that is characteristic of a particular virus), latch on to that sequence and



cut it, and change the sequence to a different one. This can scramble the genetic sequence of a virus in such a way that the virus no longer can make copies of itself. The Harvard team used this technique to kill several viruses that are made of RNA—including influenza virus—in a laboratory dish. The next step will be to see if the CRISPR technique can also be used to kill viruses in a living animal. That will be much harder. However, if it works, the technique might someday help humans fight viral infections. ♥

What's coming up:

- ▶ What to eat when you can't stomach your favorites
- ▶ Popular pickleball can have some pitfalls
- ▶ Tips to cope with bladder pain and burning
- ▶ The risks of anesthesia for older adults

