I
n the late 1980s, many middle-aged adults began taking aspirin on a regular basis, following findings from a famous Harvard study (see “The ascent of aspirin”). Aspirin helps prevent blood clots that can restrict blood flow and trigger a heart attack or stroke. But there’s a price to pay for that cardiovascular protection—a heightened risk of bleeding.

“The benefit of a taking a daily low-dose aspirin always has to be counter-balanced with the risk of bleeding, which is usually minor but sometimes serious,” says Dr. Christopher Cannon, a cardiologist at Brigham and Women’s Hospital and professor of medicine at Harvard Medical School. Over the past three decades, we’ve learned a lot more about aspirin’s benefits and risks in a broad range of people, including those with certain health conditions and older adults.

Today, around half of Americans ages 45 and older take a daily low-dose aspirin. For some of these people, it’s a good idea. Others should consider stopping, as the risks likely outweigh the benefits. But many people fall somewhere in the middle. Here’s the latest about who should consider aspirin to prevent heart attacks and strokes—and who should avoid it (see “An aspirin algorithm” on page 7 for a summary).

Remember: even if you’re in the “yes” category—and especially if you fall under the “maybe” classification—never take (or stop taking) daily aspirin without first discussing it with your doctor.

YES: People who’ve already had a heart attack or stroke caused by a blood clot (ischemic stroke). For these people, a daily aspirin often makes sense. This practice, known as secondary prevention, applies to anyone with atherosclerotic cardiovascular disease (ASCVD). That includes all conditions caused by plaque buildup (atherosclerosis) anywhere in the body—not just heart attacks and ischemic strokes, but also transient ischemic attacks (TIAs, or mini-strokes), angina (chest pain from narrowed heart arteries), and peripheral artery disease (plaque in leg arteries). Anyone who’s had coronary bypass surgery or a stent implanted

continued on p. 7 ▶▶
Living with an implantable defibrillator

Q My 79-year-old father recently received an implantable cardioverter defibrillator. While he seems to be doing okay, he and my mother are both very anxious about what will happen if he ends up needing a shock. I live nearby and want to support them, so can you offer any advice? I’d also like to be aware of the general advice for people who have these devices.

A You can reassure your parents that feeling anxious about a shock from an implantable cardioverter defibrillator (ICD) is both understandable and fairly common. An ICD continuously monitors the heart’s rhythm and rate, checking for abnormalities. If it senses a minor glitch, the device emits a low-energy electrical correction that might go unnoticed. But correcting a potentially life-threatening rhythm problem requires a significant jolt. Some patients have told me it feels as though they’ve been kicked in the chest by a horse. It may help to know that many people with ICDs never receive a shock. In fact, recent improvements allow doctors to program the devices to have a longer period of “watching” to allow the errant rhythm to terminate on its own before delivering a shock.

I’d suggest that your father ask his primary care doctor for a referral to a therapist, as there are specific treatments—such as relaxation therapy, cognitive behavioral therapy, and support groups—that may help ease his anxiety.

If a shock does occur, he should call his physician right away, or 911 if he cannot reach the office, experiences more than one shock, or has other symptoms such as chest pain. Sometimes people lose consciousness after a shock, but that’s uncommon. After a shock, most experts recommend that the person avoid driving for six months, although if there was no loss of consciousness, this restriction may be reduced to three months or possibly less.

People with ICDs need to be monitored for the rest of their lives, usually about every three to six months. But newer wireless technology now allows some of these evaluations to be done from home. A special wand that communicates wirelessly with the device sends information from the ICD to a computer.

Your father should always wear a medical alert bracelet or carry a wallet identification card to let others know about his ICD in the event of an accident. Finally, the American Heart Association has information about other devices that may (and those that probably will not) interfere with ICDs and pacemakers; see www.health.harvard.edu/pacemaker.
More clues about the healthiest carb choices

New evidence links diets that contain more simple, low-quality carbs to a higher risk of heart disease. But the big picture is more complex.

Carbohydrate categories can be bit confusing. Nutrition experts refer to carbs as simple or complex, low-quality or high-quality, or even just “bad” or “good.” Carbohydrate-rich foods can also be ranked by how quickly the sugar they contain is absorbed into your bloodstream after you eat it, using a scale known as the glycemic index, or GI (see “Glycemic index and glycemic load, explained”).

First developed 40 years ago, the glycemic index was in the news again recently. Last March, The New England Journal of Medicine published a large international study suggesting that diets with a higher glycemic index and load are associated with a higher risk of cardiovascular disease and death. The link was strongest among people who were overweight or obese.

“Glycemic index is one way to think about carbohydrate quality, but it’s not the only way,” says Dr. Frank Hu, professor of nutrition and epidemiology at the Harvard T.H. Chan School of Public Health. You can also classify carbs as sugars, starches, and fiber.

Carb categories

Here’s a rundown of these three categories of carbs:

Sugars. Easily digested sugary foods (sodas, candy, and desserts) have a high GI. Eating them causes blood sugar spikes and dips, which over time can make the body less sensitive to insulin, the hormone that regulates blood sugar. The resulting insulin resistance triggers weight gain, inflammation, and other factors that contribute to the artery-clogging plaque that’s responsible for most heart disease.

Fiber. Foods full of fiber are digested much more slowly and tend to have a lower GI. Low-GI foods include whole or minimally processed carbohydrate-rich foods, such as whole grains, legumes (beans and peas), nuts, vegetables, and fruits. Here’s the easy part: these carbohydrates are also classified as complex, high-quality, or good carbs.

Starches. Starches are another story. The most commonly consumed form of carbohydrate, starches include cereal grains such as rice, wheat, and corn, and root vegetables such as potatoes. Americans tend to eat mostly highly processed grains, such as white rice and foods made with white flour. These refined starches are quickly broken down into sugar, which is why they have higher GI values.

What is resistant starch?

But some starchy foods—most notably legumes—contain what’s known as resistant starch. Resistant starch is similar to fiber in that it cannot be directly absorbed by the body. It has to be broken down by specific gut bacteria. Eating foods high in resistant starch spurs the growth of these health-promoting bacteria. “They produce short-chain fatty acids, which make your body more sensitive to insulin and reduce inflammation,” says Dr. Hu. In effect, resistant starch has the opposite effect from sugar and other highly processed carbs in your body.

White potatoes are full of regular starch, which is why they have a high glycemic index. French fries and mashed potatoes are probably the most popular ways to prepare spuds, but potato lovers might want to consider potato salad instead. Why? “If you leave potatoes in the refrigerator for one or two days, the cold temperature transforms some of the starch into resistant starch,” says Dr. Hu. Another culinary trick that may slightly lower a food’s glycemic impact is to add vinegar or lemon juice, as the acid slows the conversion of starch to sugar in the body.

Glycemic index and glycemic load, explained

Carbohydrate-containing foods have properties that affect how quickly they are digested and how quickly the resulting glucose (sugar) enters the bloodstream. This is quantified by a measure known as the glycemic index (GI). Foods are ranked on a scale of 0 to 100; pure glucose has a value of 100.

However, the GI value doesn’t account for the quantity of the specific food a person typically eats. A separate measure, the glycemic load, indicates the change in blood glucose level when someone eats a typical serving of the food. It’s calculated by multiplying the food’s GI by the amount of carbohydrate it contains.

For the highest-quality carb intake, choose foods that have a low or medium glycemic load and limit those with a high glycemic load.

Low glycemic load: bran cereals, apples, oranges, kidney beans, black beans, lentils, cashews, peanuts, carrots.

Medium glycemic load: pearled barley, brown rice, oatmeal, bulgur, rice cakes, whole-grain bread, whole-grain pasta.

High glycemic load: white potatoes, refined breakfast cereals, sugar-sweetened beverages, candy bars, white rice, white-flour pasta.
COVID-19 and cardiovascular concerns: An evolving story

Doctors are still unraveling the connections between heart-related risks and infections with the novel coronavirus.

Editor's note: Research and news about COVID-19 change rapidly. For updated information about the pandemic, see www.health.harvard.edu/cvrc.

It’s clear that people with heart disease are more vulnerable to complications from SARS-CoV-2, the virus responsible for the COVID-19 pandemic. “But our understanding about how the novel coronavirus affects the cardiovascular system is still evolving,” says cardiologist Dr. C. Michael Gibson, professor of medicine at Harvard Medical School.

So far, much of the information has come from observational studies, which can point to trends and associations, he says. More definitive answers require long-term, randomized clinical trials that control for different factors (including varied medical histories and medication use) to study how COVID-19—and possible therapies—affect people who have or are at risk for heart disease.

**From infection to inflammation**

There’s nothing novel about infections harming the heart. In fact, some germs attack oddly specific parts of the heart (see “When microbes invade the heart”). Any serious infection or illness stresses your heart, in part by increasing its need for oxygen. Respiratory viruses that cause coughing and congestion make this problem even worse.

In addition, your immune system unleashes inflammatory molecules to fight the infection. These cells may boost the likelihood of blood clots, which may explain why heart attacks appear to be about six times more likely to occur within a week after a bout of influenza (flu) compared with other time periods.

**COVID-related clots**

Are blood clots more common in people with COVID-19 compared with other severe infections? We just don’t know, since there are no good comparison studies, says Dr. Gibson. Just being bedridden makes you more likely to develop clots in the veins, a problem known as venous thromboembolism (VTE). But in people who weren’t hospitalized, VTE rates were similar among people with COVID symptoms who tested positive and those who tested negative for the virus, according to recent research.

**Heart damage?**

The SARS-CoV-2 virus invades cells by binding to a protein called ACE2 found throughout the body, including in cells in the heart, lungs, and blood vessels. Early reports spiked concerns about possible heart muscle damage (myocarditis) from COVID-19 infections in young, healthy athletes. But the latest data suggest this risk is less than 5%. “Subsequent studies confirmed high levels of inflammatory cells, but not necessarily in the heart muscle itself,” says Dr. Gibson.

**High blood pressure**

Two drug classes often used to treat high blood pressure, ACE inhibitors and angiotensin-receptor blockers (ARBs), interact with the ACE2 protein to lower blood pressure. Initially, it wasn’t clear if these medications might help or harm people infected with SARS-CoV-2. But a review that pooled findings from 52 studies involving more than one million people offered some reassurance. Overall, ACE inhibitors and ARBs seem to be safe in people infected with COVID-19.

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**When microbes invade the heart**

Viruses, bacteria, and even fungi can lead to infections that reach the heart, triggering an uncommon disorder called myocarditis (inflammation of the heart muscle). Viruses such as Coxsackie, herpesvirus, and others are the most common culprits. But two relatively common bacterial infections—strept throat and Lyme disease—occasionally wreak havoc inside the heart.

Group A Streptococcus bacteria cause strep throat and scarlet fever, which, if not properly treated, can develop into rheumatic fever. An overzealous immune response creates inflammation throughout the body, leading to symptoms such as a fever and tender, painful joints. But the disease can also damage the heart’s mitral valve, which controls blood flow between the heart’s left upper and lower chambers. While now rare in the United States, rheumatic fever is still common in developing countries.

Lyme disease, which is transmitted by bloodsucking ticks, can also have rare but potentially serious heart consequences. Ticks carrying the culprit bacteria, Borrelia burgdorferi or Borrelia mayonii, are most commonly found in the Northeast, mid-Atlantic, and parts of the Midwest. Classic symptoms of Lyme disease are a red “bull’s-eye” rash, fever, headache, and fatigue. But if the infection enters the heart tissues, it can disrupt the electrical signals that coordinate the heartbeat. Known as Lyme carditis, this complication occurs in about one in 100 Lyme disease cases reported to the CDC.
3 ways to enhance your walking workouts

Interval and Nordic walking can ramp up your fitness, while mindful walking can alleviate stress.

The beauty of walking for exercise is that it requires no special skills or equipment other than a comfy, supportive pair of shoes. The downside: it can get a little tedious. To break through your boredom, try reinvigorating your walking regimen with some new twists on this popular form of exercise.

“All steps count. But some count a little more than others,” says Dr. Edward Phillips, assistant professor of physical medicine and rehabilitation at Harvard Medical School. For example, if you add short bursts of fast walking to your strolls, that elevates your heart rate and improves your cardiorespiratory fitness more than if you simply stayed at a slower pace, he says. Pick up a pair of Nordic poles to use during your walk, and you’ll engage many more muscles and burn more calories. Or you can use walking as an opportunity to practice mindfulness, a mind-calming practice that can help you release stress.

Following are suggestions about how and where you might try these techniques.

**Interval walking**

Dr. Phillips recommends this routine only for more experienced walkers, not beginners. For interval walking, you alternate brief bursts of fast walking with more moderately paced strides. After a five-minute warm-up, walk briskly for 15, 30, or 60 seconds. Then slow down and recover at a normal pace for an equal amount of time (or you may want to double your recovery time). Start with shorter intervals of rapid walking and gradually lengthen them as you increase your stamina over the following weeks and months. Or you can keep the intervals constant and extend your overall workout time. “A smartwatch programmed to beep at set times comes in handy, but a $10 watch with a second hand also works,” says Dr. Phillips. Alternatively, you can use landmarks instead of time to mark your intervals. For example, walk briskly for one or two city blocks, between two telephone poles, or a quarter of a lap around a local track. The motion is similar to cross-country skiing, with the poles slanted back behind you as you walk. These workouts may boost your cardiovascular workload and calorie burn up to 25% more than regular walking.

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**Nordic walking**

Nordic walking uses special poles with hand straps that help you engage your upper body. The motion is similar to cross-country skiing, with the poles slanted back behind you as you walk. These workouts may boost your cardiovascular workload and calorie burn up to 25% more than regular walking.

If you have the opportunity, try walking close to water—the ocean, a river, lake, or pond—as these locations tend to encourage relaxation, Dr. Phillips suggests. Another option, labyrinth walking, can be especially helpful for evoking a meditative state, he says. A pattern of paths that weave in a circle around a central point (see photo), a labyrinth encourages slow, mindful steps. You can find labyrinths in many places, including public parks, houses of worship, and health care facilities such as hospitals and hospices.

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Autoimmune conditions and heart disease

Threats to the heart may be undertreated in people with conditions that boost inflammation.

When the body’s immune system goes awry and mistakenly attacks its own tissues, it triggers an outpouring of white blood cells and other substances. Known as inflammation, this largely invisible, insidious process is the hallmark of autoimmune systemic inflammatory diseases (see “Mysterious immune system misfires”).

Inflammation is also at the heart of cardiovascular disease. When fatty plaque builds up inside arteries, the body perceives it as foreign and enlists a similar arsenal of white blood cells. These further ignites an inflammatory response, creating conditions that encourage the blood clots that are responsible for most heart attacks and strokes.

So it’s perhaps not surprising that people with autoimmune inflammatory diseases are more likely to have heart attacks and to die of cardiovascular disease than people in the general population. Growing recognition of this problem—and the related treatment challenges for affected patients—has spurred a new specialty known as cardio-rheumatology, says Dr. Katherine Liao, codirector of the Cardiovascular Rheumatology Clinic at Harvard-affiliated Brigham and Women’s Hospital.

“For many years, there weren’t good therapies for rheumatoid arthritis and related inflammatory diseases,” she says. But that changed about two decades ago, with the development of targeted drugs known as biologics that modify the body’s response to inflammation. With these improved therapies, people started living longer. Soon, cardiovascular disease emerged as a leading cause of death for people with these conditions.

More deadly heart attacks

Heart attacks are twice as likely to be fatal in younger adults with systemic inflammatory conditions, according to a study co-authored by Dr. Liao in the March 30, 2021, European Journal of Preventive Cardiology. People with inflammatory conditions were more likely to have higher blood pressure, but they had similar rates of high cholesterol and diabetes compared with people without inflammatory disease.

Just like diabetes, systemic inflammatory conditions such as psoriasis, lupus, and rheumatoid arthritis should be considered “risk enhancers” when it comes to estimating a person’s odds of heart problems, according to the 2019 expert guidelines for heart disease prevention. Still, the heart risks from these less-common conditions may be underappreciated. In the recent study, people with inflammatory diseases were less likely to be prescribed aspirin and statins, although both can help lower the risk of a repeat heart attack.

Treatment options

Currently, there aren’t clear guidelines about how to best prevent and manage cardiovascular disease in people with systemic inflammatory diseases beyond what is recommended for the general population. Some medications used to treat rheumatoid arthritis and related conditions may lower the risk for dying from heart disease, including methotrexate (Rheumatrex, Trexall) and biologic drugs known as TNF-alfa inhibitors. These include infliximab (Remicade), adalimumab (Humira), and etanercept (Enbrel).

Nonsteroidal anti-inflammatory drugs (NSAIDs), which include ibuprofen (Advil, Motrin), naproxen (Aleve, Naprosyn), and celecoxib (Cleexa) may be prescribed to control pain and swelling. But these drugs can raise blood pressure and are linked to a higher risk of a heart attack. At Dr. Liao’s clinic, cardiologists and rheumatologists work closely together to provide the best possible care for people with both conditions.
to restore blood flow to the heart also is considered to have ASCVD.

MAYBE: People with evidence of ASCVD on an imaging test. This group of people includes those who are at high risk of a heart-related problem based on visual evidence of plaque in their arteries. The tests include a coronary artery calcium scan, a CT scan done for another reason (such as screening for lung cancer or a pulmonary embolism), or an ultrasound of the neck arteries (carotid ultrasound). There aren’t any large studies showing that aspirin helps these people, Dr. Cannon cautions. The benefit probably outweighs the risk, but the calculation will depend on your individual situation, he adds.

MAYBE: People with diabetes. In general, people ages 40 to 70 with diabetes who face a high risk of heart disease should consider low-dose aspirin. You can estimate your 10-year risk of ASCVD with this calculator created by the American Heart Association and American College of Cardiology (find it at www.health.harvard.edu/heartrisk). High risk is defined as a 10-year risk of 20% or higher.

MAYBE: People at risk of both clotting and bleeding. For the most part, people without ASCVD at risk of bleeding should not take daily aspirin. That includes anyone with a history of bleeding in the gastrointestinal tract or elsewhere in the body (for example, serious nosebleeds or blood in the urine); a stomach ulcer (peptic ulcer disease); low blood platelets (thrombocytopenia); blood clotting disorders (coagulopathy); and people who take nonsteroidal anti-inflammatory drugs (NSAIDs) routinely, such as people with arthritis or other painful inflammatory conditions. The one exception is people with a 10-year ASCVD risk score of 20% or higher, in which the cardiovascular risk may outweigh the bleeding risk. Taking a proton-pump inhibitor such as omeprazole (Prilosec) along with aspirin can help diminish the chance of gastrointestinal bleeding, says Dr. Cannon.

PROBABLY NOT: Anyone over 70 without ASCVD. Because bleeding risk rises with age, most people without ASCVD (see the first category above) over 70 shouldn’t take a daily aspirin. The most recent study in people older than 70 found no significant benefit but an increased risk of bleeding. If you started taking aspirin in middle age, that may have been a good idea at the time. But once you reach 70, the bleeding risk of daily aspirin may outweigh any protection against heart attack or stroke, so you should check with your doctor about whether you should continue.

**An aspirin algorithm**

This table provides a quick summary of the current advice about aspirin; see the main story for more details.

<table>
<thead>
<tr>
<th>Prevention</th>
<th>Condition</th>
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<tr>
<td></td>
<td>Above age 70</td>
<td>Low or high</td>
<td>PROBABLY NOT</td>
</tr>
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**Fruit of the month**

**Stone fruits**

Peaches, nectarines, apricots, peaches, plums, and cherries are all considered stone fruits because they all contain large, hard seeds or pits. They’re all decent sources of fiber, vitamins A and C, and potassium.

While they’re all delicious eaten out of hand, you might also want to try them in recipes like these:

**Peach salsa:** Dice two ripe but still slightly firm peaches and two medium tomatoes. Mix with a little minced red onion, jalapeño pepper, cilantro, garlic, and lime juice to taste. Serve with grilled fish or chicken, or on tacos and other Mexican food.

**Grilled nectarines:** Cut nectarines in half and remove the pits. Brush both sides with a neutral oil (such as canola) and sprinkle with a little brown sugar. Grill until lightly browned, turning once or twice, for 3 to 5 minutes. Enjoy as a side dish or dessert, or in a salad with arugula, toasted pine nuts, and crumbled feta cheese.

**Roasted plums:** Place halved, pitted plums on a baking sheet and toss with a little canola oil. If desired, drizzle with a little honey and a sprinkle of cinnamon. Roast at 375°F for about 30 minutes, or until soft. Serve topped with Greek yogurt.
A big belly boosts heart risks, even if you’re not overweight

Even if your weight is normal, a widening waistline may put you at a higher risk of heart disease, according to a new scientific statement from the American Heart Association.

Fat inside the center of your body (known as abdominal or visceral fat), which encases your organs, is more worrisome than fat found just beneath the skin (known as subcutaneous fat). In addition, fat can also accumulate in the liver, known as nonalcoholic fatty liver disease, which adds to cardiovascular disease risk.

According to the statement, published April 22, 2021, in Circulation, you should check your waist circumference regularly. To do so, wrap a tape measure just above the upper border of your hipbone. Ideally, your waist size should be less than one-half of your height, even if your body mass index is in the normal range. (Determine your weight category at www.health.harvard.edu/bmi-calculator.) Regular physical activity and cutting down on simple sugars are the best ways to shed extra belly fat.

A new way to take aspirin: Liquid-filled capsules

Millions of Americans who take a daily low-dose aspirin to lower their heart attack risk (see “Advice about daily aspirin” on page 1) may soon have a new way to take this popular drug. In early March, the FDA approved the first liquid-filled aspirin capsule, Vazalore.

The novel formulation is designed to release aspirin in the duodenum, the first part of the intestine. This may help reduce stomach erosions and ulcers that sometimes occur with regular aspirin (also known as plain or immediate-release aspirin).

Most of the aspirin sold in the United States is enteric-coated, which is also formulated to protect the stomach. However, the coating reduces aspirin absorption in some people. When compared with regular and enteric-coated aspirin, Vazalore’s clot-preventing effects were equal to regular aspirin and faster than enteric-coated formulations. The capsules are expected to be on the market later this year, available in doses of 81 or 325 milligrams.

Leisure time exercise better than work-related physical activity

Although exercise guidelines encourage all types of physical activity, a new study suggests that while leisure-time activity promotes cardiovascular health, job-related activity does not.

The study included than 104,000 men and women ages 20 to 100 living in Copenhagen who rated their leisure and work-related physical activity as low, moderate, high, or very high. After an average follow-up of 10 years, researchers found that the people who got most of their physical activity on the job were more likely to experience those cardiovascular problems.

These findings held after researchers adjusted for factors such as lifestyle habits, health conditions (such as high blood pressure and high cholesterol), and socioeconomic status that could sway the results. One possible explanation: compared with leisure exercise, work activity doesn’t raise a person’s heart rate enough to improve fitness. The study was published April 9, 2021, in the European Heart Journal.

What’s coming up:

- Spice up your cooking to eat less sodium
- Unusual causes of fainting
- Screening for atrial fibrillation
- Nonalcoholic fatty liver disease and your heart