



Harvard Heart Letter

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Dietary supplements: Dubious value, hidden dangers

Most lack evidence of any health benefit—and some contain stimulants that could affect your heart.

Of the nearly \$37 billion Americans spend on dietary supplements each year, about two-thirds are for vitamins and minerals. The rest are pills, powders, and tinctures that contain various substances isolated from an array of sources—mainly plants but also animals and microorganisms.

Why are these products so popular? Some people believe that our food supply has been stripped of important nutrients, so they take supplements to replace what's "missing" (although many foods are already fortified to replace vitamins that are destroyed during processing). Others feel that Western medicine relies too heavily on pharmaceuticals and prefer to take natural substances instead. (However, a number of common drugs are derived from plants.)

But the real reason the supplement industry is thriving dates back to a law enacted nearly 25 years ago, says Dr. Pieter Cohen, an associate professor of medicine at Harvard Medical School who studies dietary supplements. The Dietary Supplement Health and Education Act of 1994 defined supplements as foods, not drugs. That means they're not subject to the same regulations governing the quality and safety of prescription drugs.

"Supplements can be sold and advertised as improving health without any evidence that they actually work in humans," says Dr. Cohen.

"You'd think the law would create rules stating that health claims must be based on scientific evidence. But it's the exact opposite—the law protects manufacturers by allowing them to say things like 'may support heart health' even if there's not a single human trial to back up that claim."



Don't be misled by vague, unsubstantiated claims listed on supplement labels.

Duped consumers

In fact, even when large, multimillion-dollar, government-sponsored clinical trials show that a particular supplement is *not* effective (as is the case for over-the-

counter fish oil to prevent heart disease in healthy people), supplement companies are still allowed to list vague health claims on product labels, says Dr. Cohen. As a result, consumers end up buying products based on false promises.

What's more, if a supplement does prove beneficial for a certain health problem, there's no guarantee that the product you buy at your local drugstore will have the same effect. The amount of the active ingredient found in supplements can vary dramatically—not just from brand to brand but from batch to batch.

For example, red yeast rice supplements contain a substance called monacolin K, which is chemically the same as the active ingredient in the cholesterol-lowering drug lovastatin (Mevacor). But when Dr. Cohen and colleagues tested 28 different brands of red yeast

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NEWLY RELEASED

The Sensitive Gut: *A guide to managing common gastrointestinal disorders*
www.health.harvard.edu/gut

FIVE THINGS TO DO THIS MONTH

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- 2 Assess your distress level with these 10 questions.** A high score suggests depression or anxiety, which may raise your heart risk. (page 3)
- 3 Join a local pool.** Exercising in water can be a good alternative to land-based exercise. (page 5)
- 4 Find a new way to enjoy broccoli.** This versatile veggie is packed with nutrients. (page 7)
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ASK THE DOCTOR

by DEEPAK L. BHATT, M.D., M.P.H., *Editor in Chief*

High calcium score: What's next?

Q I recently got a coronary artery calcium scan and the results showed that I have quite a bit of calcium in my heart arteries (my score was 900). Should I have an angiogram to confirm the results? I don't have any heart-related symptoms, but I'm worried about having a heart attack.

A That is a very high coronary artery calcium score. But the short answer to your question is no. The main reason to have an angiogram is to locate a narrowed heart artery that is causing chest pain or other symptoms. For the test, a cardiologist injects a dye that is visible on x-rays into the blood vessels of your heart, then takes a series of x-ray images. This is done in preparation for angioplasty, in which a narrowed artery is opened, or as a prelude to referral for coronary artery bypass surgery.

But if you are otherwise healthy and not having any symptoms, in general, you should not have an angioplasty or bypass surgery. So there's no point in having an angiogram, especially since it exposes you to a small amount of radiation and can cause complications, such as an allergic reaction to the dye, bleeding, or even a heart attack or stroke (although those events are extremely rare).

However, your high calcium score does strongly suggest you have coronary artery disease. Calcium is involved in the buildup of fatty plaque inside arteries, which develops in response to damage caused by high LDL (bad) cholesterol and other factors in the blood. Rather than seeking out additional testing, you should instead focus on lowering your risk factors for coronary artery disease—especially your LDL cholesterol level. The exact target depends in part on any other risk factors you have.

For you, depending on your cholesterol level, that might mean taking a statin drug, such as atorvastatin (Lipitor) or rosuvastatin (Crestor). You should definitely follow a healthy diet, which means plenty of vegetables, fruits, and whole grains. Try to avoid foods high in saturated fats (especially red meat), which can be bad for the heart in many ways. And if you need to lose weight, consider consulting a dietitian or nutritionist who can help you devise a safe, effective way to shed any extra pounds.

Your blood pressure should ideally be 120/80 mm Hg or lower. Again, diet changes may help; try to eat less salt by steering clear of processed foods. But if you have high blood pressure, you may need one or more medications to bring it down to an optimal range.

If you do develop worrisome symptoms in the future, such as pain, pressure, or a squeezing sensation in your chest, call 911 immediately if they persist for more than just a few minutes. If the symptoms only occur with exertion, ask your doctor about getting a stress test. It can reveal abnormal changes in your heart's rhythm or electrical activity, as well as compromised blood flow to the heart. ♥



A high calcium score usually doesn't warrant more tests.

Send us a question for Ask the Doctor

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By email: heart_letter@hms.harvard.edu
(Please write "Ask the doctor" in the subject line.)

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Because of the volume of correspondence we receive, we can't answer every question, nor can we provide personal medical advice.

Confused about carbs?

When it comes to carbohydrates, quality and quantity matter—just as with everything else you eat.

These days, low-carb diets are more popular than ever. But this weight-loss strategy is hardly new. It began in the 1960s with the Atkins diet, followed by the South Beach, paleo, and keto diets. All of these diets—which swap carbohydrates for protein or fat—can help some people lose weight, at least over the short term.

But as is true for most diets that require you to avoid many popular foods, low-carb diets are often hard to maintain over the long haul. And if you do keep your carb intake low, the long-term effects on your heart and overall health remain something of a mystery so far. But a new study provides some clues.

The study, which included more than 15,400 people, upholds the old adage of moderation in all things. Researchers found that on average, people whose diets included moderate amounts of carbohydrate (50% to 55% of calories) lived about four years longer than people who ate lower-carb diets (fewer than 40% of calories from carbs) and a year longer than people with high-carb intakes (more than 70% of calories).

What replaces missing carbs?

Of course, man does not live by bread alone—the rest of your diet matters, too. “Just calling it a low-carb diet isn’t enough. You have to know the sources of the other calories in the diet,” says study co-author Dr. Eric Rimm, professor of epidemiology and nutrition at the Harvard T.H. Chan School of Public Health.

That’s why the researchers homed in on exactly what types of protein and fat were filling in for the missing carbs among those in the low-carb group. Eating more animal-based proteins and fats from foods (such as beef, lamb, pork, chicken, and cheese) instead of carbohydrates was linked to a greater risk of

early death. Eating more plant-based proteins and fats (from vegetables, legumes, and nuts) was linked to a lower risk.

Researchers asked participants about their diets twice (at the start and after six years), then kept track of their health for a median of 25 years after the study began. All were part of the Atherosclerosis Risk in Communities (ARIC) study, which includes people from four communities in the United States. Although not a perfect representation of America’s population, the participants were from a variety of races and cultures, Dr. Rimm notes.

The investigators then combined the ARIC results with findings from seven multinational studies (including studies from Greece, Sweden, and Japan) that also looked at carbohydrate intake and longevity. The upshot: people with high and low carbohydrate intakes had shorter life expectancies than those who ate moderate amounts of carbs. The study was published in the August 16 *Lancet Public Health*.

If you consider the diverse diets that people eat across the globe, the results consistently support the benefit of a moderate-carb diet, says Dr. Rimm. The take-home message is also in line with what he and other nutrition experts have advocated for years: eat a mostly plant-based diet, such as the Mediterranean or DASH diet, with animal-based protein (if desired) in limited amounts.

Responding to the critics

Ardent low-carb advocates argue that low-carb diets not only foster weight loss, they may also help lower heart disease risk by reducing cholesterol, blood sugar, and blood pressure levels. All true, says Dr. Rimm. “Many weight-loss diets can be successful, usually because you’re much more conscious of what



UPGRADE YOUR CARB CHOICES	
Instead of this Try this
White rice	Brown rice, barley, quinoa, buckwheat, wheat berries
Pasta made from refined flour	Whole-grain pasta, whole-wheat couscous
White bread	Whole-grain bread
Fried potatoes	Small sweet potato baked with skin
Fruit-flavored yogurt	Plain yogurt with fresh or frozen fruit
Sugary breakfast cereals	Oatmeal cooked with fresh or dried fruit
Sugar-sweetened beverages (sodas, fruit drinks, punches, sweetened iced tea, lemonade)	Water, low-fat milk, unsweetened or lightly sweetened tea or coffee, seltzer with a splash of 100% fruit juice
Cakes, cookies, pies, and other low-nutrient sweets	Fruit, 1 to 2 ounces of dark chocolate

you’re putting in your mouth.” But it’s the weight loss—not the specific diet—that leads to the drops in cholesterol and other risk factors.

What about the alleged improvements in mood and thinking from going low-carb that some people report? That’s likely because they stop eating foods full of white flour and added sugar, says Dr. Rimm. Those highly processed carbs can cause a rapid rise and fall in blood sugar levels, leading to “brain fog.” Eliminating those carbs can clear that fog. But rather than shunning all carbs, you can switch to healthier ones, which have the added advantage of providing fiber, vitamins, and minerals (see “Upgrade your carb choices”). ♥

The head-heart connection: Mental health and heart disease

Common mental health disorders are linked to a higher risk of heart attack and stroke. Learn to spot the warning signs.

Heat disease and mental health issues are both common. So it's not surprising that these problems often occur together. But are people with depression or anxiety more prone to developing cardiovascular disease?

Teasing out the answer to that question has proved tricky. Some factors known to contribute to a higher risk of heart disease (for example, an unhealthy diet, lack of exercise, and smoking) are also common in people with mental health issues. Now, new research that adjusts for those potentially confounding factors suggests the answer is yes.

The study, in the September *Circulation: Cardiovascular Quality and Outcomes*, included more than 221,000 people ages 45 and older without any history of heart disease. They all filled out a short mental health questionnaire (see "Assess your distress"). After an average follow-up of more than four-and-a-half years, people who had reported high or very high levels of depression and anxiety were more likely to have had a heart attack or stroke than people without those symptoms.

A shared underlying cause?

These findings do not necessarily mean that psychological distress causes heart disease. Instead, both may arise (at least in part) from the same underlying mechanisms, says Dr. Jill Goldstein, a professor of psychiatry and medicine at Harvard Medical School and Executive Director of the Women, Heart and Brain Global Initiative at Massachusetts General Hospital.

"We have found shared causes for both illnesses that begin even before birth that are carried throughout life," she says. If a pregnant woman has abnormal levels of stress hormones and



The overlap between heart disease and mental health issues may reflect a shared vulnerability.

other substances triggered by an immune or inflammatory response, that may affect her fetus. More specifically, those substances seem to alter specific brain regions that regulate both mood and cardiac function. The effects differ depending on the sex of the fetus as well as the timing of the exposure to these maternal factors, she adds.

"Mental health disorders and cardiovascular problems might not just co-occur in adulthood. Instead, people may be vulnerable to both conditions over a lifetime because of their early exposures," Dr. Goldstein says.

Major depression is about twice as common in women than men. This

chronic disease frequently first appears just after puberty, although it can develop at any age. Sometimes, major life events—such as the loss of a job, a spouse's illness, or even a heart attack—can unmask depression, says Dr. Goldstein. Anxiety disorders, which are also more common in women, often co-occur with depression. However, she's careful to point out that screening tests for depression and anxiety (such as the psychological distress scale) are not used to diagnose major depression or anxiety disorder, which is done by a clinician. Still, your score could help you recognize a potential problem.

What you can do

If you score high on the distress level test—or just feel depressed or anxious—don't hesitate to seek help. Ask your primary care provider to recommend a mental health professional who can offer therapy (and possibly medication).

Having depression can sap your motivation and energy, sometimes so much that suggestions to exercise can sound like a cruel joke. However, being physically active—even just a little—can make a difference, says Dr. Goldstein. "Exercise is really good for your brain; in fact, there's evidence that it may increase nerve growth factors in ways that improve mood, sleep, responses to stress, and memory function." And moving more is obviously good for your cardiovascular system as well, she adds. ♥

Assess your distress

The Kessler psychological distress scale is a list of 10 questions used to identify people who need further assessment for anxiety or depression. People can select answers ranging from 1 to 5: 1 (none of the time); 2 (a little of the time); 3 (some of the time); 4 (most of the time); 5 (all of the time).

During the past four weeks, about how often did you feel

- | | |
|---|--|
| <input type="checkbox"/> depressed? | <input type="checkbox"/> tired out for no good reason? |
| <input type="checkbox"/> nervous? | <input type="checkbox"/> that everything was an effort? |
| <input type="checkbox"/> so nervous that nothing could calm you down? | <input type="checkbox"/> so sad that nothing could cheer you up? |
| <input type="checkbox"/> restless or fidgety? | <input type="checkbox"/> hopeless? |
| <input type="checkbox"/> so restless that you could not sit still? | <input type="checkbox"/> worthless? |

Scoring: 15 or lower = low; 16–21 = moderate; 22–29 = high; 30–50 = very high

Take the plunge: Try a water workout

Swimming or doing water aerobics can be a good way to keep your heart in good shape.

Looking for an activity to boost your heart health that's easy on your joints and doesn't leave you all sweaty? Swimming might be just the ticket. If you have access to an indoor pool, you can swim or do water aerobics year-round—and throughout much of your life.

“If you were to envision an exercise you could start during childhood and continue well into your later years, swimming has to be near the top of the list,” says Dr. Meagan Wasfy, a cardiologist at the Cardiovascular Performance Program at Harvard-affiliated Massachusetts General Hospital. Swimming also works many different muscles in the arms, legs, and torso. The buoyancy of the water takes the stress off your joints. That can make exercising a little easier if you have arthritis, are overweight, or are recovering from an injury.

Although swimming is fairly popular, there are few studies focused specifically on its cardiovascular benefits. But just like walking, cycling, or any other aerobic activity, swimming boosts

Swimming offers several unique benefits that make it an ideal lifelong exercise.



your heart rate, provided you do it for a sustained period of time. “There’s no reason to think you wouldn’t get the same heart benefit from swimming as you would from walking, which has the most specific evidence for lowering the risk of heart disease,” says Dr. Wasfy.

Unique effects on the heart?

However, swimming does differ from walking and most other so-called land-based exercise in two major ways. One, your body is horizontal rather than vertical, and two, it is mostly immersed in water, she notes. Both of these factors mean blood pools less in the legs. As this blood returns instead to refill the heart, this may mean the heart’s stroke volume (the amount of blood pumped

out of the left ventricle, the heart’s main pumping chamber) increases more than with other forms of exercise. A healthy heart is well equipped to work harder to deal with this extra volume.

The energy expenditure of swimming a given distance is about four times that of running the same distance. Translation: swimming one mile (equal to 66 lengths or 33 laps in a 25-yard pool) burns about the same number of calories as running four miles.

For people with heart disease

Regular exercise is recommended for nearly all people with heart disease, and swimming is definitely a good option. In fact, swimming is sometimes offered as part of cardiac rehabilitation. These programs help people recovering from a heart attack or heart surgery to exercise safely, in addition to teaching heart-healthy lifestyle habits.

“I would have no reservations about pool-based swimming for any person with stable heart disease,” says Dr. Wasfy. But such people should be more cautious when swimming in open water (a lake, river, or the ocean, for instance). For one thing, the shock of cold water can trigger the release of stress hormones such as adrenaline, possibly disturbing the heart’s rhythm. The cold also causes blood vessels supplying the skin to narrow, which may increase blood pressure and tax the heart. And out in nature, you’re farther away from medical attention if something happens, Dr. Wasfy points out.

In a similar vein, scuba diving may also be risky for people with heart disease. Although recreational scuba diving is usually a low-intensity sport, it can become more demanding depending on unpredictable environmental changes in water temperature or currents. Anyone who has or is at risk for heart disease—including people over 40 who have risk factors such as high blood pressure or diabetes—should be sure to check with their physician before scuba diving. ♥

Beyond swimming: Different types of water workouts

Swimming demands a certain amount of coordination and skill, and if you haven’t done it for years, you might hesitate to dive back in. If that’s the case, you might consider a different type of water workout. Check your local community center, YMCA, or other facilities with pools, as many offer a range of water-based exercise classes.

Possible options include light (low-intensity) water aerobics, muscle-strengthening classes, or those that incorporate dance, yoga, or Pilates, all done in the shallow end of a pool. Some classes are geared toward non-swimmers. Some use special gear, such as neoprene gloves with webbed fingers to provide extra resistance as you move your arms through the water. Another example is a flotation or swim belt, which people use while jogging in place in the deep end of the pool. Known as deep-water running, this form of exercise can be especially helpful when recovering from an injury.

What is “broken-heart syndrome?”

This reversible heart condition—which often mimics a heart attack—is being recognized with increasing frequency.

The term “broken heart” usually conjures up the sad ending of a love affair. In fact, the death of a spouse is a commonly cited trigger for broken-heart syndrome—a temporary weakening of the heart that causes symptoms similar to a heart attack. Also known as stress cardiomyopathy, the condition usually results from severe physical or emotional stress, though sometimes there is no identifiable trigger. Although rare, it’s now being recognized much more often than in the past.

“Stress cardiomyopathy was not on anyone’s radar screen 25 years ago,” says Patrick O’Gara, a cardiologist at Harvard-affiliated Brigham and Women’s Hospital. Japanese doctors who first described the condition in the early 1990s called it takotsubo cardiomyopathy. Why? During an episode, the heart takes on an unusual shape that resembles a tako-tsubo (octopus pot), a traditional clay vessel a fisherman uses to trap an octopus.

Exactly why the heart muscle takes on that shape isn’t exactly clear. But the current thinking is that the triggering event releases an outpouring of stress hormones such as adrenaline, says Dr. O’Gara. The surge of hormones seems to stun the heart. The tip of the left ventricle (the heart’s main pumping chamber) balloons outward, while the base draws inward. As a result, the walls of the left ventricle can’t contract effectively. The heart’s workload increases, leading to symptoms such as chest pain and breathlessness.

Diagnosing the problem

Because the symptoms are so similar to those of a heart attack, doctors start the diagnostic evaluation with an electrocardiogram (ECG), a test that records the heart’s electrical activity. The ECG may show abnormalities typical of



A severe illness or major surgery are common triggers for stress cardiomyopathy.

heart muscle injury, which can occur from both a heart attack or stress cardiomyopathy. Both conditions can also cause a rise in blood levels of troponin, a protein released from damaged heart muscle, although the rise may be less pronounced in stress cardiomyopathy.

Doctors also rely on a heart ultrasound (echocardiogram) to reveal movement abnormalities in the walls of the left ventricle and the characteristic takotsubo shape. More invasive testing is often needed as well to rule out a more typical heart attack.

The brain-heart link

The most common triggers are physical, such as major surgery or a severe illness due to an infection, for example. However, talking with patients about possible triggers and how emotions can affect the heart also provides clues. “This condition reconfirms the relationship between the brain and the heart,” says Dr. O’Gara. However, stress cardiomyopathy occasionally results from medications given in a hospital, such as those used to support the circulation, he adds.

For unknown reasons, broken-heart syndrome is less common in men; about 90% of cases occur in older women. One reason may be differences in the

Possible triggers of stress cardiomyopathy

Also known as takotsubo cardiomyopathy, this condition often produces symptoms that are similar to a heart attack.

Occasionally, the reported trigger for stress cardiomyopathy stems from a happy event, such as a wedding or a surprise party. But the most common triggers are physical stresses or sad or negative events. For example:

- ▶ a severe illness, such as an infection
- ▶ major surgery
- ▶ an episode of a neurological or psychiatric disorder
- ▶ the death of a relative (especially if unexpected)
- ▶ an argument
- ▶ a devastating financial or gambling loss
- ▶ a natural disaster (such as an earthquake or flood).

number and distribution of nerves in women’s hearts compared with those of men. Hormonal factors may also play a role. The emotional triggers of stress cardiomyopathy are usually negative, such as grief, conflict, or anxiety. But in rare cases, happy events can cause stress cardiomyopathy (see “Possible triggers of stress cardiomyopathy”).

Mending a broken heart?

Most of the time, people with stress cardiomyopathy recover fully within a month, says Dr. O’Gara. However, just as with a serious heart attack, people may need to be hospitalized for several days and may have major complications. There aren’t any specific treatment guidelines, but doctors often prescribe beta blockers and ACE inhibitors, which may help the weak heart muscle recover. Broken-heart syndrome usually doesn’t recur, but anyone who experiences it once should be attuned to how he or she may react to stressful events in the future, cautions Dr. O’Gara. ♥

Vegetable of the month

Broccoli



This versatile vegetable should be a standby in crisper drawers. Not only is broccoli readily available in grocery stores, it keeps well and can be prepared in a variety of ways. As a side dish, you can eat it raw (for instance, used like cabbage in coleslaw), or steamed, sautéed, or roasted. But broccoli also can play a starring role in dinnertime dishes such as soups, stir-fries, pastas, and casseroles. When choosing broccoli, look for firm stems and tightly packed florets that are deep green or have a slightly purplish hue.

Nutritional info: Broccoli is high in vitamin A and folate (vitamin B₉), as well as vitamins C and K. It's also a good source of potassium and dietary fiber, and a half-cup serving has just 15 calories.

Easy recipe: Chop off the stems; peel and slice into small pieces. Break the crowns into bite-size pieces. Place in a steamer basket in a pan of boiling water; cover and cook for five to six minutes, until just tender. (Overcooked broccoli will turn olive-green and mushy.) Serve warm with a drizzle of olive oil and a pinch of salt and pepper. Or serve chilled with your favorite dip.



Dietary supplement warning ... from p. 1

rice from four mainstream retailers, they found widely variable amounts of monacolin K. Two brands had no detectable levels, while others contained amounts similar to that found in prescription lovastatin. Their study was published in the September 2017 *European Journal of Preventive Cardiology*.

A banned heart stimulant

Dr. Cohen's most recent study looked at two dozen products promoted to help people lose weight or boost their athletic performance. They're available online and in retail stores that specialize in supplements. All were labeled as containing higenamine (also called norcoclaurine or demethylcoclaurine), a potentially harmful cardiovascular stimulant that was banned from sports by the World Anti-Doping Agency in 2017.

Higenamine is derived from various plants, including the flowering lotus and a shrub known as heavenly bamboo. It's been studied in China for use in cardiac stress testing to simulate the effects of exercise when a person cannot walk on a treadmill. Given intravenously, higenamine can raise heart rate and cause breathlessness and dizziness.

As described in the September 2018 *Clinical Toxicology*, the amounts of higenamine detected in the 24 products ranged from trace levels to 62 milligrams (mg) per serving. Only five brands listed a specific amount on the label, but none was accurate. For some products, if people took the amount suggested on the label, they would

consume up to 110 mg of higenamine per day. The potential effect of such use isn't well studied, but it could have worrisome effects on the heart, says Dr. Cohen. (Decades ago, use of dietary supplements containing another plant-derived stimulant led to serious, sometimes deadly effects; see "Ephedra: A cautionary tale.")

In addition to supplements that promise weight loss or improved athletic ability, you should also beware of those that claim to enhance sexual function. Hundreds of these contain undisclosed ingredients, including some that are identical or similar to prescription drugs such as sildenafil (Viagra). These "all natural" products can lead to dangerously low blood pressure levels in someone also taking nitrates, which are often prescribed for people with heart disease.

Ask, don't tell

Historically, the advice has been to tell your doctor about any about dietary supplements you may be taking. Instead, says Dr. Cohen, it makes more sense to ask your doctor if you should be taking any supplements. "For certain conditions, there's a clear role for them," he says. For older adults, examples include calcium for people who don't get enough in their diets, or vitamin B₁₂ for those who have trouble absorbing that nutrient. If your doctor recommends a supplement, check the label and choose a brand that's certified by the United States Pharmacopeia or NSF International, two independent nongovernmental organizations. ♥

Ephedra: A cautionary tale

In the 1990s, dietary supplements containing ephedra (derived from the Chinese herb ma huang) were widely marketed for boosting energy and weight loss. When combined with caffeine, ephedra does promote modest, short-term weight loss. But it contains chemicals that can constrict blood vessels, and studies linked ephedra use to high blood pressure, palpitations, and heart attacks. However, because the law required the FDA to prove that ephedra-containing products were unsafe, it took a decade to compile sufficient evidence. During that time, the agency logged 16,000 reports of injuries, 62,000 consumer complaints, and at least 155 deaths related to ephedra-containing products.



Walking linked to lower heart failure risk in older women

The more a middle-aged or older woman walks or does other exercise, the lower her risk of developing heart failure, a new study suggests. Heart failure—which means the heart is too weak or too stiff to pump enough blood through the body—affects some 5.7 million Americans.

Researchers tracked the exercise habits and heart health of more than 137,000 women who were ages 50 to 79 when the study began. After an average follow-up of 14 years, women who got at least some physical activity were 11% less likely to develop heart failure than those who didn't exercise at all—and those with the highest levels of physical

activity were 35% less likely to develop heart failure.

Walking was the most common form of exercise, accounting for about 38% of the activity the participants reported. The findings, published in the September *Journal of the American College of Cardiology: Heart Failure*, are another reminder of the benefits of exercise—and that it's never too late to start.



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Angioplasty without overnight hospital stay is safe and saves money

Going home the same day after having an angioplasty not only is safe, it may save the health care system an average of more than \$5,000 per person, a new study reports.

Every year, some 600,000 people in the United States undergo coronary angioplasty, a minimally invasive procedure to open a narrowed heart artery. About half are so-called elective angioplasties, which are done on people with predictable but worrisome chest pain (stable angina).

The study, published online September 26 by *JAMA Cardiology*, followed more than 672,000 people who had elective angioplasties in 493 hos-

pitals from 2006 to 2015. Over all, only about 4% went home the same day, but rates of same-day discharge varied widely between hospitals.

However, researchers found no higher risk of death, bleeding, or other serious complications in carefully selected people who went home the day of the procedure compared with those who stayed overnight in the hospital. That was true 30, 90, and 365 days after the angioplasty.

Today, the rate of same-day discharge after angioplasty is higher—around 22%. But more widespread use of this practice (which patients prefer) could save hospitals hundreds of millions of dollars.

In vitro babies: Risk of high blood pressure in later life?

A small study found that babies conceived using assisted reproductive technology (ART) may be more likely to have high blood pressure as teenagers than those conceived naturally.

Close to 2% of babies born in the United States are conceived using ART, most commonly by in vitro fertilization, in which sperm and egg are mixed in a lab dish. In 2012, researchers found that healthy kids born via ART were more likely than their peers to have signs of premature aging of their blood vessels.

For the current study, they compared 54 of the original ART-conceived kids (who were

16 years old, on average) with 43 age- and sex-matched kids who were conceived naturally. The teens in the ART group had higher blood pressure values over all, and eight had readings of 130/80 mm Hg (considered high blood pressure in this study) compared with just one of the teens in the other group.

The findings warrant further research but suggest that people conceived by ART should be extra vigilant about getting regular blood pressure screenings, according to an editorial accompanying the study, which was published in the September *Journal of the American College of Cardiology*. ♥

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What's coming up:

- ▶ Simple steps for making plant-based meals
- ▶ Understanding aneurysms
- ▶ The right way to stretch before and after a workout
- ▶ Recovering from heart surgery: What you need to know