

SPECIAL REPORT

The business of healing hearts

Cardiac care is a money-making machine that too often favors profit over science

How to keep your heart young

Risky heart tests to avoid

An excerpt from CONSUMER REPORTS
Updated February 2012

February 2012

Dear Employee,



Consumer Reports is excited to work with the National Business Group on Health and your employer to bring you some of the most important health stories we have recently published. For 75 years, Consumer Reports has published information that helps consumers make better choices about the things they buy. We think it's time that consumers approach health care the same way.

The first article focused on hospital infections, especially the most deadly kind: blood-stream infections caused by central-line intravenous (IV) catheters. The second examines tests and treatments related to the country's leading killer, heart disease. Research shows that many people get heart tests and treatments they don't need, while others fail to get those that they do.

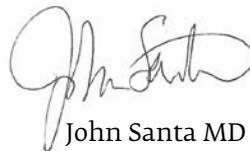
Millions of people are screened each year for heart disease. Some screening tests, such as those for high blood pressure and cholesterol levels, can help identify heart disease early and lead to lifesaving treatments. But in our zeal to prevent heart disease, and in some cases stimulated by financial incentives, doctors and patients often pursue other tests that are more likely to mislead and harm than clarify and cure.

Misleading screening tests can lead to treatment that is not needed and even harmful. For example, a recent study in the *Journal of the American Medical Association* found that tens of thousands of angioplasties and stent insertions are done each year in patients who could get by with simpler, safer measures instead, such as lifestyle changes and, in some cases, medication.

Here at Consumer Reports we take the same approach to health care that we do to other kinds of products and services. Start with our own independent experts. Present meaningful comparisons along with examples from real people. Focus on safety. Give consumers simple tips to avoid problems and improve results.

We look forward to hearing any thoughts you have about this article or others you will see in the future. Contact us by sending an e-mail to HealthImpact@cr.consumer.org.

Sincerely,



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The business of healing hearts

Cardiac care is a money-making machine that too often favors profit over science



AS BABY BOOMERS hit their 60s and heart disease remains the No. 1 killer of all U.S. adults, it's no surprise that ads exploiting people's concerns about their heart are cropping up everywhere.

"Find a new way to tell Dad you love him," suggests an ad from the Heart Hospital of Austin, in Texas. "Show your love with a HeartSaver CT."

The website Track Your Plaque warns, "The old tests for heart disease were wrong—dead wrong." It says heart scans are "the most important health test you can get."

"Does your annual physical use the latest technology to prevent ... heart disease before it strikes?" asks the radio ad for the Princeton Longevity Center, in Princeton, N.J. The center's website promises that its full-day exams—which can include heart scans and usually aren't fully covered by insurance—can detect the "silent killers that are often missed in a typical physical exam or routine blood tests."

Those and similar ads are not unusual. They are part of a marketing strategy by hospitals, medical centers, and doctor groups to cash in on consumers' fears.

"It's a big problem," says Kimberly Lovett, M.D., a physician at Kaiser Permanente and a member of the San Diego Center for Patient Safety at the University of California, San Diego School of Medicine. "These marketing strategies exploit patient fears and promote tests that aren't necessary for most people."

In a June 2011 editorial in the *Journal of the American Medical Association*, Lovett suggests that inappropriate testing can lead to inappropriate treatment. "Direct-to-consumer cardiac testing may pose more harm than benefit," she writes.

Lovett is one of a growing chorus of physicians calling for a crackdown on indis-

ILLUSTRATIONS BY EVA TATCHEVA

criminate testing and treatment in favor of an evidence-based approach to cardiac care.

But money talks—often loudly enough to drown out those voices. As doctors and hospitals add more and more expensive high-tech gadgetry to their arsenals, all too often it's profit, not science, driving decisions on how heart disease is detected and treated in the U.S.

A CONSUMER REPORTS investigation—including interviews with doctors and other health professionals, our own survey of more than 8,000 subscribers, and analysis of medical research, marketing materials, and the available data on heart doctors—shows the following:

- People often get the wrong tests. Good tests detect disease and lead to effective treatments. But many heavily marketed cardiac tests don't do that. "I can understand how people would think 'what's the

harm?'" Lovett says. "But not only is the wrong test a waste of resources, it can be downright dangerous if it leads to inappropriate treatment."

- Angioplasty is overused. Recent research suggests that many patients in nonemergency situations are rushed to angioplasty, an invasive procedure to clear blockages in the coronary arteries, when dietary changes and exercise, plus drugs, would be just as effective and much safer. Other research shows that angioplasty is also too often used for severe blockages, when surgery to bypass the occluded arteries could provide longer-lasting benefits.

- Consumers don't have enough information on heart doctors. To help fill that gap, we've teamed with the Society of Thoracic Surgeons to publish ratings of heart-surgery groups that perform bypass surgery. (For details, subscribers can go to www.ConsumerReports.org/HeartRatings.) Unfortunately, there's no comparable registry for interventional cardiologists, who perform angioplasty. So if you want information about those doctors, you'll have to ask some tough questions.

- Real differences exist among heart surgeons. When there is solid information on doctors, such as with heart-surgery groups, the data show that quality can vary in important ways. In addition, recent research reveals that many practices aren't following the latest guidelines. It pays to thoroughly explore your options.

- Heart disease is often misunderstood. Many patients, and even some doctors, have an outdated understanding of the best way to prevent heart attacks.

"Medicine doesn't change quickly or easily," says Steven Nissen, M.D., chairman of the department of cardiovascular

medicine at the Cleveland Clinic. "It's important to understand that heart disease is a chronic condition, and it's not something you can just 'fix' and then forget about. It's something you have to manage for the rest of your life."

Best ways to protect your heart

Many people fail to take the proven steps to prevent heart attacks and strokes. The strategies listed below are ranked by the number of heart attacks and strokes they could prevent in American adults over the next 30 years, according to a special report in the July 29, 2008, issue of *Circulation*.

Lower your blood pressure

GOAL A systolic (upper) level under 140 and a diastolic (lower) level under 90.

PROBLEMS PREVENTED

6.2 million heart attacks, 7 million strokes.

WHAT YOU CAN DO

Get your blood pressure checked at least once a year. If it's high, cut back on salt, lose excess weight, and exercise more. If drugs are necessary, our CR Best Buy Drugs recommendation for most people is a generic diuretic, especially a thiazide diuretic.



Improve your cholesterol levels

GOAL An LDL (bad) cholesterol under 160 for people at low risk of heart attack, 130 for those at intermediate risk, and 100 for those at high risk. (To determine your risk, use our online calculator at www.ConsumerReports.org/heartrisk.)

PROBLEMS PREVENTED

9.6 million heart attacks, 3 million strokes.

WHAT YOU CAN DO

Men 35 and older as well as women 45 and older with coronary risk factors, such as high blood pressure,



should get tested at least every five years. Other adults might consider testing, too. If your levels are high, control your weight, exercise more, quit smoking, and eat a heart-healthy diet. If medication is necessary, our CR Best Buy Drugs recommendations for most people are generic lovastatin, pravastatin, or simvastatin.

Lose excess weight

GOAL A body mass index (BMI) under 30 (the cutoff for obesity) and preferably under 25 (the cutoff for being overweight).

PROBLEMS PREVENTED

7.1 million heart attacks, 1.1 million strokes.

WHAT YOU CAN DO

Determine your BMI by multiplying your weight in pounds by 703, then dividing by your height squared in inches. (Or use our online calculator at www.ConsumerReports.org/bmi.) Even simpler: Measure your waist. Men with a waistline over 40 inches and women with a measurement over 35 inches should lose weight.



Control your blood sugar level

GOAL A fasting blood glucose level under 110 for people who do not have diabetes, and preferably under 100; an A1C level, a measure of long-term blood sugar control, under 7 percent for people who already have the condition.



PROBLEMS PREVENTED 4.8 million heart attacks, 0.6 million strokes.

WHAT YOU CAN DO Consider getting your blood sugar level measured, especially if you're at high risk for type 2 diabetes because of high blood pressure or cholesterol levels or excess weight. The same lifestyle changes that lower blood pressure and cholesterol can lower blood sugar, too. Our CR Best Buy Drugs recommendation for most people with type 2 diabetes is generic metformin, alone or combined with other drugs.

Stop smoking

GOAL Quit—for good.

PROBLEMS PREVENTED

3.3 million heart attacks, 1.4 million strokes.

WHAT YOU CAN DO Talk with a doctor about the best smoking-cessation program for you and be examined for smoking-related illness.



Consider low-dose aspirin

GOAL Take a low-dose (81 milligrams) aspirin daily if appropriate.

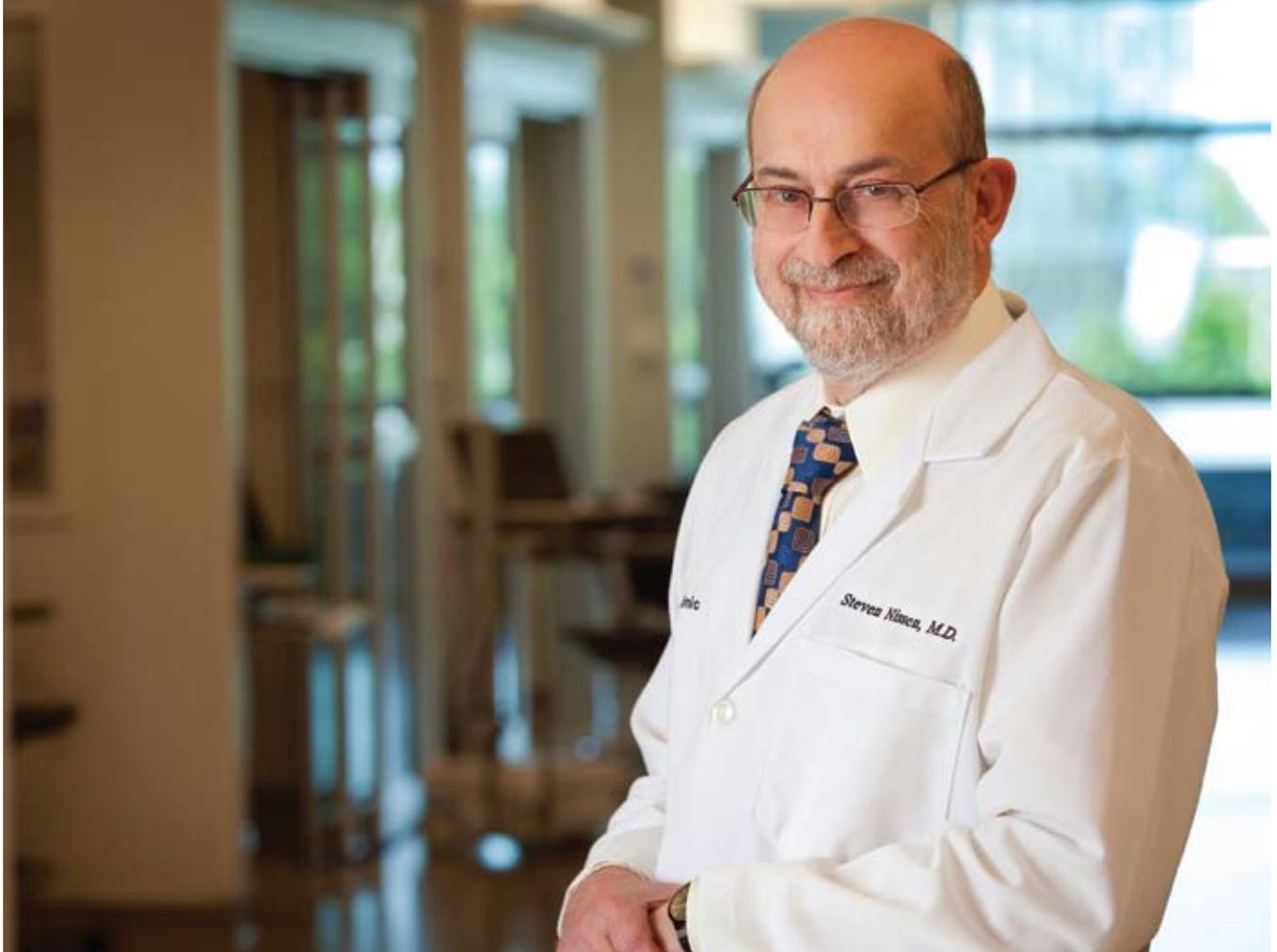
PROBLEMS PREVENTED

3.4 million heart attacks, 0.3 million strokes.

WHAT YOU CAN DO

Talk to a doctor about your risk of heart attack, stroke, and gastrointestinal bleeding starting at age 45 for men and 55 for women. Use our calculator (at www.ConsumerReports.org/heartrisk) to see whether the benefits of aspirin outweigh its risks for you.





FINANCIAL INCENTIVE Steven Nissen, M.D., head of cardiovascular medicine at the Cleveland Clinic, says health care favors more costly procedures.

medicine at the Cleveland Clinic in Cleveland, Ohio. “It may take years for evidence to trickle down to private practice.”

Another reason for consumers to be alert, Nissen adds, is the health-care system favors expensive procedures. “Physicians are reimbursed far more for a 20-minute angioplasty than an hour-long discussion,” he says. “Those financial incentives inevitably drive clinical decisions. That’s why patients have to do their own due diligence to get the best care.”

▶ Heart myths busted

Of course, paying attention to your heart is a good thing. Everyone should have their blood pressure and weight measured at each doctor visit. Many should undergo basic tests such as those for high blood sugar and cholesterol. And knowing the signs of a heart attack can be lifesaving.

But our online survey of 8,056 readers ages 40 to 60 found that many people overestimate their risk of heart attack. For example, 29 percent of the people with no history of heart disease and normal blood pressure and cholesterol levels described themselves as being at risk of heart dis-

ease, though only 9 percent said they had actually heard that from a doctor.

Many people also overestimate the ability of screening tests to provide reassurance. Healthy respondents whose recent tests included an electrocardiogram (EKG) were more likely than those who didn’t to agree with the statement “going through the testing process is worth the peace of mind that comes with knowing everything is OK.”

But in truth, the test can produce falsely positive results in people without symptoms who are at low risk for heart disease. Almost no one recognized that potential harm: 87 percent completely or somewhat agreed that it was “better to have a scare that turns out to be nothing than to not get tested at all.”

Truth is, the best things for your heart often aren’t fancy tests or aggressive treatment. “People tend to view heart doctors

▶ DID YOU KNOW?

How old is your heart?

Our heart calculator (www.ConsumerReports.org/heartrisk) uses key health information—such as blood pressure and cholesterol levels and whether you smoke or have diabetes—to answer that question. It can also estimate your risk of having a heart attack or stroke in the next 10 years. Knowing that information can help determine which heart tests and treatments you need. For example, while most people should regularly get their blood pressure and cholesterol levels measured, generally only people with symptoms of heart disease need an electrocardiogram or exercise stress test.



as some sort of action hero and think the more aggressive, the better,” says William Boden, M.D., a professor of medicine at the University at Buffalo Schools of Medicine and Public Health in New York. “But a conservative approach should never be considered passive or inferior.”

The push to overtest and overtreat heart disease stems at least in part from outdated notions of it as a kind of plumbing problem. Doctors would often test for blockages and then clear them using angioplasty.

In that procedure, also called percutaneous coronary intervention (PCI), the doctor inflates a thin balloon in the narrowed artery to crush deposits, typically leaving a cylindrical insert called a stent in place to prop the vessel open. When performed within hours of a heart attack to clear a blocked or nearly blocked artery, the procedure works very much like clearing a clogged pipe. In those situations, it can be a lifesaving treatment.

But in nonemergency situations, the analogy breaks down. As it turns out, diseased arteries are riddled with smaller deposits that are the real troublemakers. We now know that most heart attacks occur not because a large deposit blocks an artery but when a smaller, less stable one ruptures, producing a blood clot that cuts off oxygen to the heart.

The latest research shows that drug therapy and lifestyle changes are the best first-line treatment because they address the underlying risk factors that cause de-

posits to form and trigger attacks. While angioplasty can help relieve symptoms such as chest pain or shortness of breath in people with stable disease, it doesn't prevent heart attacks or prolong life better than medical therapy alone.

Moreover, angioplasty triggers heart attacks in 1 to 2 percent of patients and adds thousands of dollars to the cost of treatment.

Heart doctors are often seen as action heroes, and the more aggressive the better, a surgeon says.

Furthermore, there's no need to scan people willy-nilly, because most people have some deposits in their arteries by the time they reach middle age. “I'm sure I have some arterial buildup,” Lovett says. “It's just a process of aging.”

▶ Too many tests

In our survey, 44 percent of people without heart risk factors or symptoms reported undergoing a heart-specific screening test such as an electrocardiogram, exercise stress test, or ultrasound of the carotid arteries, even though such tests aren't recommended for healthy people.

And most underwent testing without first getting crucial information on the accuracy of the tests, the potential complications, or what they would need to do if the tests came back with worrisome results.

Julia Brown, a registered nurse in Washington, D.C., was one of the exceptions, a healthy survey respondent who opted out of extra testing. “You have to be careful,” Brown says. “These shotgun screening tests often lead to additional testing and treatment that has its own dangers. In my line of work, I get to see firsthand the disasters that occur.”

A recent study of 2,000 healthy middle-aged adults bears out Brown's experience. It found that people who had a heart scan were more likely than those who didn't to be prescribed medications and to undergo invasive tests and procedures such as angioplasty and even heart bypass. But they are no less likely to have a heart attack or other cardiac event. According to the researchers, those scans “do not have a role” in screening low-risk people.

“Once a doctor sees something even remotely abnormal, the reflex is to try to ‘fix it’ even if there's no evidence that what you saw will cause a problem or that what you are doing will help,” Nissen says. He points to a 52-year-old nurse featured in a case study he co-authored in the Archives of Internal Medicine. False positive results from her heart scan led to unnecessary angioplasty, which set off a cascade of complications and further surgeries, including, finally, a heart transplant.

Proponents sometimes say that the risk of overtreatment is outweighed by the benefit of discovering disease that wouldn't be detected any other way. Not true, our experts say. Standard assessment tools that use information gleaned from basic checkups, such as age, weight, and blood pressure, are good predictors of risk and can help determine effective ways to reduce it. While there are some heart attacks that occur truly without warning, Nissen says it's “rare to have significant narrowing of the arteries and have no symptoms and no other risk factors.”

What about the motivational value of picturing the inner workings of your heart? A heart scan does produce “a pretty picture,” Lovett says, “but it ultimately doesn't lead to better outcomes.”

Paul Ridker, M.D., director of the Center for Cardiovascular Disease Prevention at Brigham and Women's Hospital in Boston, has studied the scans and concluded

Heart attack warning signs

Real heart attacks usually don't look like those in the movies, with sudden, chest-wrenching pain. But recognizing one is key: Getting treated as quickly as possible after a heart attack can be the difference between life and death.

Watch for these symptoms

- Chest discomfort, including pain, pressure, squeezing, or a feeling of fullness in the center of the chest. The symptoms may wax and wane.
- Pain or discomfort that radiates to one or both arms, the back, neck, jaw, or stomach.
- Sudden onset of shortness of breath, even without chest discomfort.
- A cold sweat, nausea, or light-headedness.

Note that while chest discomfort is the most common symptom, women are

somewhat more likely than men to experience the others.

What to do

- Call 911 immediately. Don't even think about driving to the hospital yourself or having someone take you.
- Chew and swallow one 325-milligram uncoated aspirin (or four 81-milligram baby aspirins) to help prevent clots from forming in your coronary arteries.
- If you're with someone who might be having a heart attack, ask whether an automatic electronic defibrillator (AED) is available, in case the person becomes unconscious and doesn't have a pulse. That easy-to-use device checks heart rhythms and delivers a shock if needed.
- It's also a good idea to learn CPR. For a simple but effective CPR technique, go to www.handsonlycpr.org.

that they aren't useful for screening. The "deposits cardiologists worry about are the less stable plaques that CT scans routinely miss," Ridker says.

There's one more downside of scans that the ads never talk about: radiation—as much as 200 times the radiation of a standard chest X-ray for some types of CT angiography. Some newer devices use less radiation, but any exposure from an unnecessary test is excessive.

▶ **Too much angioplasty**

Overuse of angioplasty has made national headlines this past year, with the Department of Justice and the Senate Finance Committee investigating incidences in which hospitals subjected hundreds of patients to needless procedures.

But recent research suggests that the problem is not isolated to a few overzealous practitioners. Only half of procedures that used angioplasty to open narrowed arteries in nonemergency situations were clearly appropriate, according to a study of almost 500,000 cases published in July

2011 in the *Journal of the American Medical Association*. The researchers also uncovered wide variation among hospitals; the rate of clearly inappropriate procedures varied from less than 6 percent at some to greater than 16 percent at others.

Equally disturbing, a third of patients in another large study were not discharged with the right drugs. And without the

Sometimes patients have so many stents it's called a full metal jacket.

necessary drugs to control risk factors such as high cholesterol and hypertension, heart disease can be expected to progress.

Some hospitals have become such angioplasty factories that the procedure is used even when surgery to bypass the oc-

cluded artery would be better. Many patients who would have had bypass surgery a decade ago now undergo angioplasty instead, according to a recent study that tracked the rate of procedures at U.S. hospitals between 2001 and 2008.

"Sometimes patients have so many stents that bypass surgery becomes impossible," says Fred Edwards, M.D., medical director of the department of cardiothoracic surgery at the University of Florida in Jacksonville and director of the Society of Thoracic Surgeons Research Center. "That's called a full metal jacket."

One factor leading to the overuse of angioplasty is that the same doctors who perform the procedure often also act as gatekeepers for the patient's cardiac care. For example, patients often sign a consent form for angioplasty before going in for angiography, the definitive test for blocked arteries. Then, if the angiogram reveals blockages, the interventional cardiologist can recommend clearing them while the patient is still on the table.

Convenient? Sure. But necessary? Usu-



SHOTGUN TESTS Julia Brown, R.N., says unnecessary tests can lead to unnecessary treatment.

PHOTOGRAPH BY CADE MARTIN

ally not. In nonemergencies, “you have time to consult with a heart surgeon and even your primary-care doctor to discuss the options and arrive at the treatment strategy that’s best for you,” Boden says.

Most patients and doctors overestimate the benefits of the procedure, suggests a September 2010 survey of 153 patients and their physicians at a Massachusetts medical center. Just 63 percent of physicians knew that except in emergencies, angioplasties only ease symptoms. And even those who were up to date apparently of-

ten didn’t inform their patients: 88 percent of patients who consented to the procedure mistakenly believed it would reduce their risk of having a heart attack.

No doubt the financial incentive to tackle heart disease with a \$10,000 procedure before running a simple test or prescribing inexpensive generic medication also plays a role. In a study of more than 23,000 Medicare claims, more than half of patients had angioplasty without first undergoing standard testing to prove it was necessary. And the rate of those proce-

dures has increased 300 percent over the last decade and are a huge drain on increasingly limited resources, accounting for at least 10 percent of increased Medicare spending since the mid-1990s.

It’s likely that the high rate of angioplasties is egged on at least in part by industry. The U.S. Senate investigation of cardiologist Mark Midei, M.D., of Towson, Md., who allegedly performed hundreds of the procedures inappropriately, revealed that he had been wined and dined and given consulting fees by stent maker

Heart tests you need (and those you don’t)

The tests below are arranged from most to least necessary for most people. The evidence for each has been reviewed by the U.S. Preventive Services Task Force, an independent group supported by the Department of Health and Human Services. The task force determines whether the benefits of each test outweigh its risks, which can include the chance that a falsely positive result will lead to additional, and unnecessary, tests and treatments.

We also considered four other factors: whether evidence has

emerged since the task force’s report that changes the recommendation; the number of people affected by the form of heart disease detected by the test; the value of the test, including the cost of the test and treatment of any disease if it’s detected; and whether a test has benefits beyond its cardiovascular ones.

For details on each, including a tool that shows our recommended advice based on your age, gender, and risk level, go to www.ConsumerReports.org/hearttests.

TEST Blood pressure

A reading of your systolic (upper) and diastolic (lower) number at least once a year by a doctor using a blood-pressure cuff.

BEST FOR Everyone.

TEST Cholesterol

A blood test at least every five years to measure your LDL (bad) and HDL (good) cholesterol levels, as well as your triglycerides, an artery-clogging fat.

BEST FOR Men 35 and older and women 45 and older who have other coronary risk factors, such as high blood pressure or a history of smoking. For others, the benefits of the test are less certain.

TEST Blood glucose

A blood test at least every three to five years to measure your blood glucose level.

BEST FOR People at high risk of type 2 diabetes, including those with any of these risk factors: a systolic (upper) blood pressure over 135 or a diastolic (lower) pressure over 80; obesity (with a body mass index of 30 or over); or an LDL (bad) cholesterol over 130. For others, the benefits of the test are less certain.

TEST C-reactive protein

A periodic blood test to measure your CRP level, a marker for inflammation of the arteries, which has been linked to an increased risk of heart attack.

BEST FOR Possibly for people at moderate coronary risk, such as those with a high LDL (bad) cholesterol, to determine how aggressively they need to lower their LDL.

People at high or low coronary risk probably don’t need the test, since the results for them won’t affect treatment decisions.

TEST Electrocardiogram (EKG or ECG)

A test that uses electrodes attached to the chest to measure and record electrical activity in the heart and provide information about your heartbeat and heart health.

BEST FOR People who have symptoms of heart disease, such as chest pain; middle-aged people who are just starting to exercise; and for people 50 and older as a baseline. Other people should generally not get the test for screening purposes.

TEST Exercise stress test

A test that measures the heart’s function while it is stressed by exercise or, in some cases, medications.

BEST FOR People who have symptoms of heart disease, such as chest pain, and middle-aged people who are just starting to exercise. Other people should generally not get the test for screening purposes.

TEST Abdominal aortic aneurysm

An ultrasound of the abdomen that looks for a ballooning of a portion of the aorta, the main artery that carries blood from the heart to the rest of the body. Such aneurysms can be deadly if they burst.

BEST FOR Anyone who has a detectable lump in his or her abdomen felt by a physician during a physical exam and men 65 and older, especially those who are current or former smokers. Women 65 and older who are long-term smokers or who have a

family history of aortic aneurysm might consider the test, though the benefits for them are less certain. Other people should not get the test for screening purposes.

TEST Peripheral artery disease

A comparison of the blood pressure in your arms with the blood pressure in your legs, using either a blood-pressure cuff or an ultrasound, to look for clogging of the arteries in your legs.

BEST FOR People who have leg pain while walking, a symptom of clogged peripheral arteries. Other people should generally not get the test for screening purposes.

TEST Carotid artery disease

An ultrasound of the arteries on either side of your neck. Clogging of those arteries can increase the risk of stroke and can be treated with a surgical procedure.

BEST FOR People who have suffered a stroke or mini stroke (a transient ischemic attack). Other people should not get the test for screening purposes.

TEST CT angiography

A CT scan that takes multiple images of your coronary arteries to produce a three-dimensional picture of the arteries.

BEST FOR Possibly people who have chest pain and abnormal results on an EKG and exercise stress test, though most of those people probably need standard angiography instead, the gold-standard for diagnosing heart disease. Other people should not get the test for screening purposes.

Abbott Laboratories.

While Midei might be an extreme example, industry invests heavily in the cardiology community. More than half of the almost 500 authors of major cardiovascular clinical-practice guidelines published from 2004 to 2008 had financial relationships with commercial entities, according to a March 2011 report in the Archives of Internal Medicine. And groups such as the Society for Cardiac Angiography and Interventions (SCAI) and the Heart Rhythm Society get financial support from drug and device makers.

Christopher White, M.D., SCAI chairman for cardiovascular diseases at the John Ochsner Heart and Vascular Institute in New Orleans, La., says his organization accepts money from industry but sets firm boundaries, too. "Without a relationship with industry, there's no opportunity for innovation," White says. "However, we make no excuses for people who mismanage that relationship. When my society finds out about it, we kick them out."

▶ The tests you need

Which heart tests you need depends on whether you have symptoms that could indicate heart disease, such as angina (chest pain) and shortness of breath.

People without symptoms should focus on tests for high blood pressure, cholesterol, and blood sugar levels, since the best way to prevent heart attacks and strokes is to control those risk factors. And you don't need high-tech tests to check for them. "The question is not whether you *can* test for disease, but whether you *should*," Ridker says. "If a test can't define the necessary therapy and doesn't help with follow-up, then it should not be ordered."

In our survey, 12 percent of healthy respondents said they underwent stress testing, which measures the heart's function while it is stressed by exercise. That's usually a bad idea because in low-risk people the test produces a lot of falsely positive results. The exceptions: older airline pilots, bus drivers, and others whose job affects public safety, or people who are middle-aged or older with multiple heart risk factors who are starting to exercise.

People with symptoms usually need an exercise stress test, possibly with an echocardiogram (which uses sound waves), or a nuclear test (which uses radioactive material) to produce an image of the heart. CT angiography might be

appropriate for people with inconclusive stress-test results to see whether a somewhat more invasive test, standard angiography, is necessary. But the results are often so uncertain that they have to be followed up with standard angiography anyway.

In standard angiography, a doctor threads a tube from the groin into the coronary arteries and injects a dye so that blockages show up on X-ray. Skipping the stress test and going straight to angiography is warranted only for people at very high risk of having a heart attack or who have symptoms or underlying conditions that could make stress testing risky, such as chest pain that occurs even at rest.

▶ Get the right treatment

When testing confirms heart disease but shows no imminent threat of heart attack, our experts say the best approach is a long-term commitment to lifestyle changes plus drugs to lower blood pressure and cholesterol levels, ease chest pain, and prevent blood clots. After three to six months of therapy, if you still have troublesome symptoms, you could consider more invasive options.

If testing reveals severe blockages, angioplasty or bypass surgery might be warranted. But even then you should weigh your options. If the doctor recommends angioplasty, ask why that's preferable to

bypass. If he or she suggests bypass, ask about angioplasty. If you're not satisfied, consider getting a second opinion. Bypass is often called for when the heart's main artery or three other major arteries are occluded; angioplasty might be an option if one or two vessels are blocked.

When choosing a bypass surgeon, there's reliable data to draw on, as our ratings show. While many hospitals and cardiologists track similar data for angioplasty, that information is not publicly available. One indicator of physician quality is the number of procedures he or she performs. Look for an interventional cardiologist who performs at least 75 angioplasties a year and a hospital that does at least 400. To avoid a physician or practice that churns out too many, ask whether the doctor's and hospital's procedures undergo regular peer review.

But you need to know about more than just volume. "Consumers can ask whether a practice participates in our registry, which indicates the hospital can benchmark their performance against a national standard," says Frederick Masoudi, M.D., associate professor of medicine at the University of Colorado in Denver and senior medical officer for the American College of Cardiology's National Cardiovascular Data Registry. Masoudi says the data is being reorganized into a more accessible format and is expected to be released soon.

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National Business Group on Health

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Business Group members are primarily Fortune 500 companies and large public-sector employers—representing the nation's most innovative healthcare purchasers—that provide health coverage for more than 55 million U.S. workers, retirees and their families. The Business Group fosters the development of a safe, high-quality healthcare delivery system and treatments based on scientific evidence of effectiveness.

Business Group members share strategies for controlling health care costs, improving patient safety and quality of care, increasing productivity, and supporting healthy lifestyles.

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