Save your life
Cancer screening is oversold. Know the tests to get—and those to skip.

EARLY DETECTION saves lives. That’s the assumption that drives aggressive cancer-screening campaigns. It’s what persuades women to host “mammogram parties” where they gather friends for wine, cheese, massages, prizes, and breast-cancer screenings. It’s what persuades men to offer up blood for prostate-cancer tests at hockey games or onboard a huge red bus parked at sporting-goods stores.

But the big red bus and other direct-to-consumer screening efforts raise big red flags, our experts say. For one, those campaigns may not be entirely altruistic. In exchange for snacks and door prizes, the radiology clinics and hospitals often behind the campaigns benefit from a new crop of paying customers. Zero, the nonprofit group that offers free prostate-cancer screening at events around the country, counts among its partners doctors and businesses that can benefit financially from cancer testing and treatment.

But most important, the message that you have nothing to lose and everything to gain from being screened for cancer—that is, to be tested for a cancer before you have any symptoms of it—simply isn’t true. “The medical and public-health community has systematically exaggerated the benefits of screening for years and downplayed the harms,” says H. Gilbert Welch, M.D., a professor of medicine at the Dartmouth Institute for Health Policy and Clinical Practice in Lebanon, N.H.

In a recent article in the New England Journal of Medicine, Welch found that the number of early breast-cancer cases had shot up since mammography became common three decades ago but that advanced cancer cases hadn’t declined much. Welch estimated that in 2008 more than 70,000 women 40 and older were found to have small, nonaggressive cancers that were treated even though they probably wouldn’t be life-threatening.

Such treatment, including radiation or the surgical removal of all or part of the breast, can cause serious complications, such as bone loss and menopausalike symptoms. And even when it doesn’t lead to treatment, screening can lead to unnecessary biopsies, which can cause anxiety and pose a small risk of infection.

“When it comes to screening, most people see only the positives,” says Otis Brawley, M.D., chief medical officer of the American Cancer Society. “They don’t just underestimate the negatives, they don’t even know they exist.”

Of course, for some tests, the benefits clearly do outweigh the risks. “My family’s experience illustrates how screening can make all the difference,” says Tracy Doss, an educational assistant in Austin, Texas. Doss lost her father and a grandfa-

Questions you should ask
Before undergoing any cancer screening, ask your doctor:
• If the test results are positive, will it save my life?
• Am I at higher risk for cancer than the average person, and if so, why?
• How often does the test give false alarms? How often does it provide falsely reassuring results?
• Are any other tests just as good?
• If the results are positive, what’s next?
ther to colon cancer but probably won’t develop the disease herself, because doctors found and removed precancerous growths using colonoscopy and she will continue to be screened.

But for many other cancer tests, the benefits and risks are more evenly balanced, with the final decision depending on a thorough conversation between patient and doctor. And with some tests, routine screening poses more risks than benefits, and needless expense.

“The marketing message that early detection saves lives is simple and compelling,” says Laura Nikolaides, M.S., director of research and quality-care programs at the National Breast Cancer Coalition. “But the reality as we understand it today is much more nuanced. The problem is how to get that more complex message to the public when it’s so different than what they’ve come to believe.”

For this investigation, we pored over reams of research, consulted medical experts, surveyed more than 10,000 readers, and talked with patients. We found that too many people are getting tests they don’t need or understand, and too few are getting those that could save their lives. Many patients, and even some doctors, can be confused by cancer screening. That’s because:

Cancer is different than once thought. Doctors used to view cancer as uniformly deadly, but researchers now understand that cancer cells can appear and then disappear on their own, or never spread. Most screening tests don’t discriminate between the harmless and deadly kinds.

Statistics can mislead. “Doctors and patients don’t understand numbers,” says Jeffrey Starke, M.D., director of infection control at Texas Children’s Hospital in Houston. “You can take the same set of data and either scare people or reassure them depending on how you represent the numbers.” Starke knows firsthand about the potential harm of screening. He almost died of an infection following what he now views as an unwarranted biopsy triggered by prostate-cancer screening.

Some tests just aren’t very good. For example, screening for pancreatic and ovarian cancers doesn’t save lives in part because tests rarely find them at a curable stage.

Bottom line. Weighing the risks and benefits of cancer screening is best done in the context of a doctor-patient relationship, not at a party or a sporting event. “It’s wrong to promote these tests for everybody,” says Roger Chou, M.D., an associate professor of medicine at the Oregon Health and Science University in Portland. “Truth is, sometimes the choice to screen or not is a close call.”

Cancer 2.0 Cancer screening and treatment are at a crossroads. As tests become more sensitive, they find increasingly tinier cancers, and more of them. But many of those abnormal cells don’t fit our conventional notion of how cancer behaves.

“The popular understanding of cancer—that if you have even a single cancer cell, it will multiply to the point that it eventually kills you—is fundamentally wrong,” says Virginia Moyer, M.D., a professor of pediatrics at the Baylor College of Medicine in Houston and chairwoman of the U.S. Preventive Services Task Force, an independent panel that provides evidence-based guidelines on health care. “What we’ve learned in the last decade or so is that cancer doesn’t always act like that. Lots and lots of cells in our body turn cancerous and then disappear; others look like cancer but do absolutely nothing.”

For example, in younger women, cancers like changes in the cervix are more likely to clear up on their own. That’s one reason the task force no longer recommends Pap smears for women younger than 21.

In fact, no screening test is right for everyone. To reduce the number of false alarms, guidelines target those at increased risk for a disease. So, for example, screening CT scans for lung cancer have only been found to help people at the highest risk, those age 55 to 74 who were heavy smokers for many years. Screening those at lower risk wouldn’t reduce mortality rates, research suggests, but would expose people to radiation, as well as follow-up tests and procedures to chase down false alarms.

Focusing on high-risk populations alone, however, doesn’t solve the problem of tests that are pretty good at finding suspicious changes but don’t tell much about whether they can actually hurt you, such as mammograms for breast cancer and prostate-specific-antigen (PSA) blood tests for prostate cancer. And that leaves many people in a quandary, trying to decide whether the risk of treatment is worth the slight chance of finding a deadly cancer.

“People are compelled toward screening and prevention as a means to secure their health,” says Kimberly Lovett, M.D., of the Center for Patient Safety at the University of California at San Diego. “It’s frustrating that we don’t have the data to address these uncertainties.”

Some people are even taking matters in their own hands, seeking tests through

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**Percentage of patients offered colon-cancer screening**

<table>
<thead>
<tr>
<th>State</th>
<th>Number of medical groups*</th>
<th>Lowest group rate</th>
<th>Highest group rate</th>
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<tbody>
<tr>
<td>Massachusetts</td>
<td>150</td>
<td>47%</td>
<td>95%</td>
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<tr>
<td>Minnesota</td>
<td>130</td>
<td>15%</td>
<td>97%</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>19</td>
<td>63%</td>
<td>81%</td>
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*A medical group is one or more medical clinics that operate as a single business.*
CR INVESTIGATES  SAVE YOUR LIFE

companies that advertise directly to consumers. They include blood tests for prostate cancer, stool tests for colon cancer, and even self-referrals for breast-cancer screening, including thermographic (heat) imaging, which the American Cancer Society says should never be used in place of mammography.

Bypassing your doctor is a mistake, Lovett says, because she has found that almost no screening test marketed directly to consumers is clearly supported by evidence-based guidelines. “The system is breaking under consumer demand for screening and preventive care,” she adds. “Truly, there is dissatisfaction among both patients and physicians.”

Misleading numbers
Americans’ understanding of cancer screening is rooted in simplistic advertising campaigns from the 1950s and 1960s that focused almost exclusively on early detection, according to Brawley of the American Cancer Society. “Those messages were appropriate in their time, but the science has evolved and our ability to detect tumors earlier and earlier has progressed,” he says. “Unfortunately, the message hasn’t changed.”

Consider this message from a 2011 promotional campaign run by the breast-cancer nonprofit Susan G. Komen for the Cure: “Early detection saves lives. The 5-year survival rate for breast cancer when caught early is 98%. When it’s not? 23%.”

Those numbers deserve an Oscar for best use of misleading statistics, according to an August 2012 editorial in the British Medical Journal. “Just because you are diagnosed earlier doesn’t mean that you will ultimately live any longer,” says co-author Steven Woloshin, M.D., a director at the Center for Medicine and Media at the Dartmouth Institute.

He provides an example: Imagine that 100 women receive a diagnosis of breast cancer after feeling a lump at age 67 and die at age 70. Their five-year survival rate is 0 percent. Now imagine that their cancer is detected at age 64 but they still die at age 70. Their five-year survival is now 100 percent, “even though,” Woloshin says, “no one lived a second longer.”

Survival statistics also tend to be inflated by overdiagnosis or by finding cancers that won’t become deadly. The more cases detected, even harmless ones, the more people are designated as survivors.

Cancer screening remains stuck in a 1960s view of the disease.

That leads to what Welch calls the popularity paradox. “The more overdiagnosis, the more effective a test appears and the more popular it becomes,” he says. “It’s a vicious cycle.”

Komen still runs those confusing numbers on its website, and other messages that make screening seem more effective than it really is still abound. “This shows how numbers can trick you to believing that screening has a really big benefit even when it is small or even nonexistent,” Woloshin says.

If you find disease-related statistics confusing, don’t feel bad. Many doctors don’t get them, either. In one study, researchers presented 412 doctors with what appeared to be data from two tests. The first showed a five-year survival rate that improved from 68 percent to 99 percent; the other, that the mortality rate dropped from two deaths per 1,000 people screened to 1.6 deaths. The doctors were three times more likely to recommend testing based on the first set of data than the second. But here’s the kicker: The data applied to the same test, PSA screening for prostate cancer. Many doctors didn’t understand that the five-year survival rate could make a test look better than it really was.

Experts we talked with said that there is a need for statistics to be presented more clearly. “We just need to be honest,” Chou says. “In the end, it’s about trusting people with the information and empowering them to make good decisions.”

So what’s the harm?
For many people, the risks of screening—overtreating harmless cancers or undergoing additional tests and procedures only to discover a test was a false alarm—isn’t a big concern. After all, it’s better to be safe than sorry, right? If following up on those red-herring results was simple and risk-free, that would be true. But you don’t have to look far to find cautionary tales.

For example, even though most men with prostate cancer will never die of the disease, many are understandably uncomfortable living with it. Research has found that almost 90 percent of men with PSA-detected prostate cancer wind up treating it with hormone therapy, radiation, or surgery. But treatment can have
Screening tests for cervical, colon, and breast cancers are the most effective tests available, according to our first Ratings of cancer-screening tests. But most people shouldn’t waste their time on screenings for bladder, lung, oral, ovarian, prostate, pancreatic, skin, and testicular cancers.

Note that our recommendations often differ with age. For example, colon-cancer screening gets our highest Rating for people age 50 to 75 but our lowest Rating for those 49 and younger, because the cancer is uncommon among younger people.

In addition, the Ratings are for people who are not at high risk; those who are at increased risk, as well as those who have signs or symptoms of cancer, may need the test or should be tested sooner or more often. Our Ratings are based mainly on reviews from the U.S. Preventive Services Task Force, an independent group supported by the Department of Health and Human Services. We also considered other factors: evidence that emerged after the task force’s report; the number of people affected by the cancer; the cost of testing and treatment; and the benefits of a test beyond its ability to detect cancer.

Get these screenings

**Cervical cancer**

**RATINGS**

- for women age 21 to 65
- for women of all other ages

**WHAT’S INVOLVED** A Pap smear (a microscopic analysis of cervical tissue samples) and a human papillomavirus (HPV) test, which looks for the virus that can cause the cancer.

**WHO NEEDS IT** Women age 21 to 30 should have a Pap smear every three years. Those 30 to 65 can go five years between Pap smears if they have had HPV testing. High-risk women may need to be screened more often. Women 65 and older don’t need to be tested as long as they’ve had regular screenings when they were younger.

**RISK FACTORS** A family history of the disease, a history of HPV infection, using birth-control pills for five or more years, having three or more children, and having weakened immunity because of HIV infection or other causes.

**Bladder cancer**

**RATING**

- for adults of all ages

**WHAT’S INVOLVED** A test to check for blood or cancer cells in urine.

**WHO NEEDS IT** Most people don’t need to be screened unless they are at high risk, because it has not proved to be effective, and most cancers found without screening are curable.

**RISK FACTORS** Smoking, a family history of the disease, and exposure to workplace chemicals.

**Colorectal cancer**

**RATINGS**

- for people age 50 to 75
- for people 65 to 85
- for people 65 and older
- for people 49 and younger

**WHAT’S INVOLVED** Colonoscopy (exam of the entire colon with a flexible scope) every 10 years, sigmoidoscopy (exam of the lower third of the colon) every five years plus a stool test every three years, or a stool test every year.

**WHO NEEDS IT** People age 50 to 75 should be regularly screened. Older people should talk with their doctor about the benefits and harms of the test based on their health and risk factors. Younger people should consider testing only if they are at high risk, because the cancer is uncommon before age 50.

**RISK FACTORS** A family history of the disease or a personal history of precancerous polyps, inflammatory bowel disease, obesity, smoking, type 2 diabetes, excessive alcohol consumption, and a diet high in red or processed meats.

**Lung cancer**

**RATING**

- for adults of all ages

**WHAT’S INVOLVED** A low-dose CT scan.

**WHO NEEDS IT** Most don’t need the test unless they are at the highest risk, because the cancer is uncommon in nonsmokers and the test is not very accurate.

**RISK FACTORS** Smoking, a family history of the disease, and long-term exposure to radon, asbestos, or arsenic.

**Skin cancer**

**RATING**

- for adults of all ages

**WHAT’S INVOLVED** A visual exam of your skin by a physician looking especially for signs of melanoma, the deadliest form of skin cancer.

**WHO NEEDS IT** Most adults don’t need the exam unless they are at high risk, because the effectiveness of screening has not been proved. But see a doctor if you notice suspicious changes in the color, size, shape, or number of moles.

**RISK FACTORS** A family history of melanoma, a personal history of frequent sunburns, a large or increasing number of precancerous moles, and being fair-skinned or heavily freckled.

**Prostate cancer**

**RATINGS**

- for men age 50 to 74
- for men of all other ages

**WHAT’S INVOLVED** Prostate-specific antigen (PSA) blood test.

**WHO NEEDS IT** Men age 50 to 74 should talk with a doctor to see whether the benefits of the test outweigh the harm for them based on their risk factors. Older men rarely need the test because the cancer typically progresses so slowly that treatment does not improve survival. Younger men should consider testing only if they are at high risk, because the cancer is uncommon before age 50.

**RISK FACTORS** A family history of the disease, being African-American, and smoking.

**Ovarian cancer**

**RATING**

- for women of all ages

**WHAT’S INVOLVED** A transvaginal ultrasound or the CA-125 blood test, which measures a protein possibly associated with ovarian cancer.

**WHO NEEDS IT** Women don’t need to be tested unless they are at high risk, because neither test is likely to detect the disease at a curable stage.

**RISK FACTORS** A family history of ovarian, breast, or colon cancers, and possibly use of estrogen after menopause for more than five years.

**Pancreatic cancer**

**RATING**

- for adults of all ages

**WHAT’S INVOLVED** Genetic tests or imaging tests of the abdomen.

**WHO NEEDS IT** People don’t need to be tested unless they are at high risk, because no test is likely to detect the disease at a curable stage.

**RISK FACTORS** A family history of the disease, smoking, obesity, and possibly type 2 diabetes.

**Testicular cancer**

**RATING**

- for men of all ages

**WHAT’S INVOLVED** A physical exam of a man’s testicles by a health-care professional.

**WHO NEEDS IT** Men don’t need to be tested unless they are at high risk, because most cancers found without screening are curable.

**RISK FACTORS** A family history, an undescended testicle, or HIV infection.
Colon-cancer screening: Just do it

Of the estimated 52,000 people who died of colorectal cancer last year, screening could have saved more than half, according to the American Cancer Society. Yet around 40 percent of people 50 and older don’t get recommended screening tests.

Not surprising, our readers, who tend to be a health-savvy bunch, do better than that, according to a survey of more than 10,000 subscribers 50 and older conducted by the Consumer Reports National Research Center. Eighty percent of them had been screened for colon cancer in the last five years. But our survey also found worrying gaps in their knowledge of the tests used.

For example, less than half of them were told what the test was looking for, about a third weren’t told of potential complications, and a quarter weren’t told what would happen if the tests had abnormal results. Only 10 percent of people who had colonoscopy or sigmoidoscopy, invasive forms of testing that use a scope to inspect the colon, were told there was a simpler option. And only 55 percent were told of the main risk of the procedures, a perforated colon.

Last, some patients got tests that are not proved effective, including fecal DNA tests and CT colonography (also called virtual colonoscopy). That’s unfortunate, because there are a number of good colon-cancer tests to choose from. The chart below shows the pros and cons of each.

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**Colonoscopy**

Every 10 years; starting at age 50. Sooner or more often for some high-risk people if results are abnormal.

How it works: Long, flexible scope is passed through the rectum and entire colon to look for polyps and tumors.

Cost: $1,120

Advantages:
- Allows immediate removal of polyps and biopsies; shows entire colon; needs to be done just once a decade for most.
- Risk of bowel infection, perforated bowel, and other complications; requires full-day preparation with laxatives and dietary restrictions; sedation required; full-day recovery likely.

Disadvantages:
- Colonoscopy required if positive; shows only the lower third of the colon, so not as thorough as colonoscopy.

**Flexible sigmoidoscopy**

Every five years, with stool test (below) every three years.

How it works: Short, flexible scope is inserted into the lower colon to look for polyps and tumors.

Cost: $740

Advantages:
- No sedation required; can return to work same day; simpler bowel preparation than for colonoscopy; fewer complications than for colonoscopy.

Disadvantages:
- Colonoscopy required if positive; can’t detect most polyps; requires yearly testing; some people might find the test unpleasant.

**Stool testing**

(immunochemical or guaiac-based) Every year.

How it works: Detects traces of blood in stool from tumors and polyps that tend to bleed.

Cost: $5 to $25

Advantages:
- Noninvasive; lowest risk of complications; samples are taken at home.

Disadvantages:
- Colonoscopy required if positive; can’t detect most polyps; requires yearly testing; some people might find the test unpleasant.

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*Costs vary widely depending on location and practice and are estimated based mainly on data from healthcarebluebook.com.

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*Risks and benefits of two tests*

The data below show that the risks of prostate-cancer screening probably outweigh the benefits and that the benefits of breast-cancer screening are smaller than many women may suspect.

**Breast cancer**

Screening 1,000 women every two years from age 50 to 69 results in:
- 5 breast-cancer deaths prevented
- 780 false-positive results
- 55 unneeded biopsies
- An unknown number of complications from breast-cancer treatment, including infection, nausea, and exposure to radiation, which may itself cause cancer.

Starting screening at age 40 instead of 50 will prevent one additional death but cause an additional 470 false positives and an additional 33 unneeded biopsies.


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**Prostate cancer**

Screening 1,000 men every one to four years from age 55 to 69 results in:
- 0 to 1 prostate-cancer deaths prevented
- 3 serious complications caused by treating the cancer, including death, heart attacks, and blood clots in the legs or lungs
- 40 men becoming impotent or incontinent from treatment complications


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devastating repercussions, including incontinence and impotence.

At age 62, John James of Houston had his prostate removed after a PSA test and follow-up biopsy found cancer. “My initial reaction was joy that I was cancer-free,” he says, “but I do believe that the side effects of surgery were vastly underrepresented.

“There’s no point in brooding, and in the end, I am still happy to not have cancer, but did it save my life? Truth is, I’ll never know.”

Jeffrey Starke’s experience is less typical but underscores the idea that testing itself poses risks. Even though he described his PSA numbers as “on the low side,” Starke didn’t question his doctor’s recommendation to do a biopsy, then a follow-up about three years later when his reading inched up. “Once you decide to go down the road of testing, you follow it where it takes you,” he says. After the second biopsy he developed sepsis, a systemic infection that almost killed him.

The experience has left a mark. “I’m of an age when I should be going in for a colonoscopy, but I’m finding that I’m resistant to it,” he admits. “I’m a physician. I’m supposed to be rational, but that kind of experience has a long-lasting emotional effect.”

Though the numbers for mammography look better than those for PSA testing, the benefits for women in their 40s aren’t as significant as they are for older women. As a result, even experts disagree. For example, the American Cancer Society says that women should be screened every year starting at age 40. But the U.S. Preventive Services Task Force says they should generally wait until age 50 and then be screened every two years. European guidelines agree, as does the World Health Organization, though it
recommends screening every year or two.

“Something we all agree on is that mammography saves lives,” Brawley says. “But women need to know the limitations up front. They need to know the risks of false positives and overdiagnosis.” And, he adds, presented with that information, “some women will choose to say no.”

Susan Kesler, 47, a teacher in Fredericksburg, Va., knows the downside of screening. After undergoing mammography for a few years, she switched to a clinic that recommended more aggressive follow-up for breast calcifications, abnormalities that are typically worrisome only when they form suspicious clusters. Kesler was called back for mammograms every six months and eventually a biopsy. But what should have been a simple procedure to obtain a tissue sample turned into a 4-hour ordeal in which she was strapped to a table, subjected to multiple punctures, and X-rayed so many times she lost count. The tests found no cancer. “I am normally very tough, but the experience left me totally shaken,” Kesler says. “And I still can’t get anyone to tell me how much radiation I was exposed to.”

What’s being done
Getting patients and doctors to change their approach to cancer screening is hard. But a number of organizations are working on the problem.

For example, in an initiative called Choosing Wisely, Consumer Reports is working with more than two dozen medical organizations to identify overused interventions, including screening tests such as Pap smears for women younger than 21. Other organizations, such as the Informed Medical Decisions Foundation, have developed brochures and videos in plain language to help patients navigate complex medical choices. And the U.S. Preventive Services Task Force and other groups are working to provide more nuanced, accurate information on cancer-screening tests.

“Cancer turns out to be a much more complicated and unpredictable disease than we used to think,” says Virginia Moyer of the task force. “And the tests we have available to us don’t work as well as we’d hoped, and can even cause harm.”

“Scientific evidence shows that some cancer-screening tests work, and people should focus on those tests rather than on screening tests that are only supported by theories and wishful thinking.”
How to slash your cancer risk

Yes, getting the right screening tests can help you avoid dying from cancer. But don’t underestimate the benefits of making lifestyle changes that might help you avoid cancer in the first place. For example, if the rate of obesity in the U.S. continues to rise at the current rate, it will lead to an additional 500,000 cases of cancer by 2030, according to projections reported by the National Cancer Institute.

Even small changes can make a big difference. If all adults reduced their body mass index (BMI) by 1 percent (about 2.2 pounds for an adult of average weight), it would not only eliminate that increase but also actually prevent 100,000 more new cancer cases.

On an individual level, research suggests that the following lifestyle factors can reduce your risk of several cancers.

**Maintain a healthy weight.** Obesity has been linked to about 7 percent of new cancers in women and 4 percent in men. The increased risk was as high as 40 percent for some cancers, particularly certain cancers in the uterus and esophagus.

**Be active.** Increasing how long, how hard, or how often you exercise can reduce your risk of colon cancer by 30 to 40 percent compared with people who remain sedentary. Physically active women may also lower their risk of breast cancer by at least 20 percent.

**Don’t smoke.** Smoking causes an estimated 90 percent of lung-cancer deaths. And it increases the risk of dying of some other cancers by 60 to 70 percent, including cancer of the larynx, oral cavity, esophagus, bladder, kidney, and pancreas.