ASSUMPTION #3

SOONER IS ALWAYS BETTER

Disturbing truth: Early diagnosis can needlessly turn people into patients

This chapter may challenge your assumptions about screening—specifically, cancer screening.

Were my daughter here (and not in the wilds of northeast Australia), she would undoubtedly have something like this to say: “Dad, don’t you think it’s time for you to find something new to write about? You keep saying the same things over and over and over . . .”

I know I sound like a broken record on this issue. (I also know that my daughter has no clue what a broken record is . . . despite the fact that I have a number of the aforementioned vinyl artifacts in my study.) For a quarter century, cancer screening has been the central thrust of my research and my writing for the public. Nevertheless, I know—from reading newspapers, watching television, seeing bills passed in Congress, and observing cancer advocacy campaigns—that a lot of misconceptions persist. If you have read either of my prior books, you undoubtedly know where I’m going—so feel free to move on.

If you haven’t, your intuition might be that cancer screening is a “no-brainer.” You might think that screening only works in one direction: it can only make things better. You might think screening can only lower your risk of getting cancer. You might think that all the “cancer
survivors” in the news (and, perhaps, in your neighborhood)—those individuals whose cancers were found early by screening and who are now doing well—provide powerful evidence that screening helps save lives.

In this chapter, I’m going to ask you to think again.

Intuition is a powerful thing. It can be very useful; it can be very misleading. In this case, it’s the latter—because screening is counterintuitive. It turns out that screening works in two directions: it has both benefits and harms. And unfortunately, the harms are much more certain than the benefits. It turns out that screening is the fastest way to get cancer. Furthermore, it turns out that the survivors whose cancers were caught by screening are less likely to be evidence of its benefit—and more likely to be evidence of its harms.

Maybe you think I’m crazy. Or maybe the way we think about cancer is crazy. Maybe we need to develop a new conceptual model of the disease. Oddly enough, that is exactly what’s happening.

SCREENING: ALWAYS A GOOD IDEA

Not infrequently, health reporters contact me. Typically, they are contacting me about screening: either about my research, the research of others, a new recommendation—whatever puts screening in the news. I view answering them as part of my job.

Yeah, it takes time away from other things. And that time generally involves not just the time talking with the reporter, but also the time to figure out exactly what I should say. This is particularly true when the story is not about my research—when figuring out what to say involves a little research in itself (such as reviewing the work of other investigators and what else is known about the topic).

I say it’s part of my job for two reasons. First, I believe academic physicians have some obligation to communicate what we are learning to the general public—both because it is the right thing to do and because many of us are ultimately supported by public funds (either via
federal grants, through Medicare payments for teaching hospitals or, as was my case for twenty-seven years, because we are federal employees).

But there is another reason it’s part of my job: it is in my interest. I’m not talking about financial interest here—being able to say that is one reason I didn’t want to make money from selling books—I’m talking about professional interest. Talking to reporters is one way to keep up with the issues in your field that are most relevant to the general public. I see it as continuing education.

Recently, I got an e-mail from a reporter asking me to call her to talk about oral cancer screening. I don’t know much about oral cancer—it’s a relatively rare cause of death. About 8,000 Americans die from it each year. For context, lung cancer kills 160,000—or about twenty times as many. Oral cancer does not even appear in the top ten causes of cancer death; it’s number twenty on the list. But I do know something about screening.

The reporter worked for a web portal for dental professionals, one that includes news, features, and columns. I know I said that answering reporters’ questions was part of my job. But to be perfectly honest, it does matter who they work for. Those who work for newspapers with names I recognize—be they in New York, LA, Tampa Bay, or Springfield, Illinois—are more likely to get a response than those who work for websites that I’ve never heard of.

So I was a little hesitant on this one. I wondered if this was really a reporter or someone in public relations. Before I devoted a lot of time I e-mailed her: “Before I call, can you send me any pieces the portal has done questioning dental practices?”

That’s my acid-test question. If you can’t find any practices to question, it’s hard to call it journalism. I got back some stuff on hepatitis and HIV exposure from an oral surgeon (who used rusty instruments and handled needles sloppily) and Medicaid fraud in a Texan dental management company (many of its dentists were performing unnecessary procedures on children—and billing for them). Not exactly what I was looking for—I was hoping for some investigation of routine dental
X-rays (aren't we all?)—but I hadn't specified that I was interested in pieces questioning "standard" dental practices. Next time I will.

I called her. She said she was following up on a story in Consumer Reports about cancer testing, which said screening for cancers of the bladder, lung, oral cavity, and skin was only necessary in people at high risk. She pointed out this was counter to the American Dental Association and the Oral Cancer Foundation's recommendations that dentists should perform routine screening for oral cancer.

Big surprise. The Oral Cancer Foundation recommends screening for oral cancer. And the American Dental Association—who would do the screening—is totally on board.

Although I had nothing to do with the list in Consumer Reports—it comes from the US Preventive Services Task Force—I was quoted in the story. She wanted to know if I thought screening for oral cancer was unnecessary. I started by saying that screening is a more complex topic than it might appear. Many assume screening can only do good. But the truth is that screening is almost certain to produce some harm, while its benefits are more uncertain. She didn't let me get any further than that.

She told me it was simple—and gently suggested that I might not understand. Screening for oral cancer only takes a few minutes and doesn't cost anything extra. There were no harms. She wanted to make sure I understood that advanced oral cancer was a horrible disease (I assured her, I do). Also, that the number of new oral cancer cases is growing among people with no known risk factors like tobacco or alcohol use (I think she even used the word "epidemic"). Survivors agreed that screening was a good thing. So did all the dental experts. There was strong evidence that patients diagnosed with early cancer did much better than those who were diagnosed at later stages.

Wow. In two minutes, she managed to touch every base—every misconception about screening. Misconceptions that always lead to the same answer: more screening. I now understand there was only one right answer to her question: “Yes—everybody should be screened for oral cancer every year.”
I don’t know what was wrong with me—I am intimately familiar with the single-right-answer question. My wife Linda asks me them from time to time. And I often get them wrong too. By the way, when I related this interview to Linda, she said, “If she wasn’t interested in learning about why there might be an opposing view, why was she calling you?” I could not answer that.

I wish I could say it was a short call. It wasn’t. I wanted to lay out the reasons why we need to be extremely cautious about screening, why we needed reliable data, why finding more cancer wasn’t necessarily a good thing, why survival statistics can be so misleading, and why patient anecdotes are not a good information source. She was having none of it.

I should be clear: the perspective of this reporter would have been the typical perspective of health reporters a decade ago. Now more and more of them do understand the subtleties of screening—and the lessons learned from screening for breast and prostate cancer. In fact, I’m probably guilty of assuming that most understand the issue.

So this was a good wake-up call for me: there still is room to improve understanding. The effects of screening remain counterintuitive. And if the reporters don’t get it, how can we doctors expect the public to?

WHERE PEOPLE START

A little background: Screening is the systematic search for abnormalities in those who have no symptoms of disease. It is a systematic effort to detect disease early.

Your intuition tells you that early detection is the best way to deal with a feared disease like cancer. It feels like prevention—which always sounds like a good thing. We all know that an ounce of prevention is worth a pound of cure. That statement is so appealing and so apparently self-evident, that most of us understandably default to: screening is always a good idea.

Because the statement about prevention and cure is so powerful in screening debates, I’ve been curious about its origins. It’s probably an
Less Medicine, More Health

old English proverb. But if you Google it, you will undoubtedly find links attributing it to Ben Franklin. But it wasn’t in reference to health:

In the first Place, as an Ounce of Prevention is worth a Pound of Cure, I would advise ’em to take care how they suffer living Coals in a full Shovel, to be carried out of one Room into another, or up or down Stairs, unless in a Warmingpan shut; for Scraps of Fire may fall into Chinks and make no Appearance until Midnight; when your Stairs being in Flames, you may be forced, (as I once was) to leap out of your Windows, and hazard your Necks to avoid being oven-roasted.

As the creator of one of the first fire departments in the United States, Franklin was interested in preventing fire.

Nonetheless, the idea of prevention is particularly powerful in health. If you want to attribute it to someone, don’t think Ben Franklin—think Dick Nixon. It was President Nixon who said, “We need to work out a system that includes a greater emphasis on preventive care.” Preventive care was central to his administration’s promotion of health maintenance organizations and to the war on cancer. But because the promotion of genuine health—largely dependent upon a healthy diet, exercise, and not smoking—did not fit well in the biomedical culture, preventive care was transformed into a high-tech search for early disease.

Although they are both considered components of preventive medicine (immunization is a third component), it’s hard to overstate the magnitude of the gap between health promotion and early disease detection. It’s a huge chasm; they are as different as night and day.

Think of health promotion as what your grandmother might have told you when you were young: get plenty of sleep, eat your fruits and vegetables, go play outside—and don’t start smoking. Ultimately, as you grew up, the onus was on you to incorporate these behaviors into your lifestyle. Her basic idea was positive: lead a healthy life.

Think of early detection as the effort to find abnormalities—they structural, biochemical, or even genetic—generally with the assistance of powerful technologies. No one has to make a difficult lifestyle
Assumption #3: Sooner is always better

change; instead, health-care professionals do something to you. We take pictures of the inside of your body. We draw your blood and test it for a broad array of molecules. We remove a piece of your tissue and examine it under the microscope. It is a scientific process, a concrete service, and it leads to an “answer.” From the doctors’ perspective, early detection has other appealing features: ordering a test is quick and easy, and it has an established billing process—unlike health promotion counseling. Not surprisingly, early detection has become the dominant cancer prevention strategy in mainstream American medicine.

But here the basic idea is far less positive: we are looking hard for things to be wrong.

One might argue that early detection should not be considered part of preventive medicine—simply because it is usually not about preventing disease. In fact, the quickest way to get diagnosed with a disease is to be screened for it.

The idea is instead to catch disease early—when presumably it is easier to treat. The intent is to prevent deaths from the disease, just as it is for many of our treatments. But while treatment is focused on a few, screening is dispersed to all.

THE ODDS ARE STACKED AGAINST SCREENING

Historically, doctors directed medical interventions toward people suffering from health problems. That’s what the word “patient” used to mean. The problems tended to be readily apparent—in our nomenclature they were “clinically evident.” The patients had obvious symptoms, and they had physical manifestations of disease that physicians could objectively observe with their naked eye—what we call “signs” of disease. Treatment was something reserved for that small portion of the population that developed clinically evident disease. In other words, treatment involved a few, all of whom could potentially benefit.

Screening is something done to the entire population: everybody who might get the disease. So screening is up against staggering odds. It must involve many, to potentially benefit a few.
Who might be helped by a population-wide oral cancer screening program? The eight thousand Americans who die from it each year.

Who might be hurt by a population-wide oral cancer screening program? The 240 million American adults who would need to be screened.

Do the math. The ratio of those who could be harmed to those who could be benefited is 30,000:1. That's an uphill battle. There has to be a lot of benefit for the 8,000 and very little harm for the 240 million to be a good trade-off. Of course, not every one of the 240 million will be harmed. But then again, not every one of the 8,000 will be helped. Nevertheless this imbalance—the number who could benefit being so much smaller than the number who could be harmed—makes it very hard for screening to help more than it hurts.

**LIMITED BENEFIT: BIRDS IN THE BARNYARD**

Let's start with the benefit of cancer screening. It's an important benefit: avoiding a cancer death. At the same time, it's equally important to acknowledge that screening doesn't avoid most cancer deaths. People who are regularly screened still can die from the cancer being screened for. Every randomized trial of screening has shown this. It's not the patient's fault. It's not the doctor's fault. It's not the screening test's fault. Instead it reflects the dynamics of cancer.

When I was in medical school, I was taught that anything labeled “cancer” would inexorably progress. Once a cell had the DNA derangement of cancer, it was only a matter of time until the cancer spread throughout the body. And it was only a matter of time until it killed the patient.

But we now recognize the world of cancer is much more diverse. At one extreme, autopsies have shown that many of us have small cancers that never bother us during life—particularly cancers of the prostate, breast, and thyroid gland. At the other extreme, screening programs have shown that early cancer detection doesn't help everyone; many go on to die from cancer despite early detection. These observations
bring us to a new conceptual model of cancer—and to turtles, rabbits, and birds.

It’s a barnyard pen of cancers. The goal is not to let any of the animals escape the pen to become deadly. But the turtles aren’t going anywhere anyway. They are the indolent, nonlethal cancers. The rabbits are ready to hop out at any time. They are the potentially lethal cancers, cancers that might be stopped by early treatment. Then there are the birds. Quite simply: they are already gone. They are the most aggressive cancers, the ones that have already spread by the time they are detectable, the ones that are beyond cure.

Screening can only help with the rabbits. The turtles don’t need help; the birds can’t be helped. The turtles create the problem of overdiagnosis (more on that later), the birds create the problem of limited benefit.

Consider this: Despite three decades of widespread screening mammography in the United States, the rate at which women present with metastatic breast cancer is unchanged. That means the number of women who are found to have metastatic breast cancer when they first contact the health system is the same now as it was before we screened for breast cancer (correcting for the size and age composition of the population—as is done for all health statistics).

That’s sad. It’s not mammography’s fault; it’s the birds’ fault. The birds are the reason that the most favorable findings of randomized trials of screening are on the order of a one-third reduction in the number of cancer deaths. The other two-thirds still die from their cancer—despite screening.

Again, avoiding a cancer death is a really important benefit. But it doesn’t happen very often—even in the best of conditions. Imagine a group of one thousand sixty-five-year-old women undergoing screening for breast cancer. Roughly ten of those one thousand women would be expected to die from breast cancer over the next ten years. But screening can’t help them all; it might help as many as one-third of them. In other words, it might help around three avoid a cancer death. The number of deaths from prostate cancer—and the number avoided by screening—would be roughly the same for sixty-five-year-old men.
And all that assumes that screening actually reduces the number of cancer deaths by one-third. The most favorable finding for prostate cancer screening was a 20 percent reduction in cancer mortality; the only other major trial showed no reduction in mortality. There have been lots of trials of screening mammography—I’ll spare you the details (and refer you to *Should I Be Tested for Cancer*?). The central estimate of its effect is about a 20 percent reduction in cancer mortality. I should be clear that there are a number of us who think that the twenty-to-thirty-year-old trials are no longer relevant since treatment is now so much better. Better treatment makes screening less important. (Why don’t we screen for pneumonia? Because treatment for pneumonia is usually so effective.) The advent of adjuvant chemotherapy and hormonal therapy represents a tremendous advance in breast cancer therapy. But our improved ability to treat women who have cancers big enough that they themselves are aware of them (i.e., cancers that are obvious without screening) almost certainly makes screening mammography less useful; my best guess is that mammography now lowers breast cancer mortality by 10 percent—or less.

That’s getting pretty small—helping on the order of one per one thousand over ten years. For context, remember that while I’m having a heart attack, running the snake up my groin helps twenty per one thousand—in the next thirty days. One breast surgeon confided to me, “If mammography was a treatment, we’d never do it. The effect is too small.”

There are more cancers to screen for than prostate and breast cancer. What do we know about the benefit of other screening tests? Lung cancer screening in heavy smokers with spiral CT: 20 percent reduction in lung cancer mortality. Colon cancer screening with fecal occult blood: 15–33 percent reduction in colon cancer mortality. Liver cancer screening: no effect. Ovarian cancer screening: no effect.

There you have it, that’s what we know about benefit. That’s why I say the most we can expect from screening is to reduce cancer mortality by about one-third. What limits the benefit? The birds.

And there’s a lot of screening going on that hasn’t been rigorously studied. Bladder, esophageal, testicular, thyroid, and skin cancer
screening—none of these have been studied. Oh, add oral cancer screening to the list.

Why don’t we know about the others? Because studying screening is a herculean task. One of my gastroenterology colleagues recently embarked on a randomized trial of colonoscopy screening to determine its effect on colon cancer mortality. Believe it or not, it has never been done. It’s another VA Cooperative Study—like the study I described in the first chapter that investigated the effect of treatment in men with really, really high blood pressure during the 1960s. That trial involved 143 men and was completed in less than two years. Doug’s colonoscopy trial involves 50,000 patients. He started in 2010; he won’t be finished till 2025.

That’s a heroic effort. Sometimes I feel a little guilty that I encouraged him to do it.

How can one study be so small and short, while the other has to be so big and long? Because one is testing the effect of focused treatment, while the other is testing the effect of dispersed screening. The hypertension trial examined the effect of treatment in men who would otherwise have a lot of bad things happen to them in the near term (bad things like death, strokes, and heart attacks). In other words, their baseline risk was sky-high. The effect of treatment was huge and could be demonstrated quickly. The colonoscopy trial involves men and women who are well—or, more precisely, don’t have colon cancer. Furthermore, the vast majority will never get colon cancer. So investigators have to do colonoscopies on a lot of people to see if it will help the very few destined to get colon cancer.

Like I said, the odds are stacked against screening.

DOES SCREENING SAVE LIVES?

Perhaps you’ve noticed: I’ve said nothing about early detection saving lives. Instead, I’ve written about averting a cancer death, lowering the cancer death rate, and reducing cancer mortality—which are three ways to say the same thing. Saving a life is something different. Screening is
often promoted as “saving lives.” I bet when most people hear that language they think it means that screening helps people live longer. That’s what most of my patients think—and that’s what I would have thought before I started to study cancer screening.

The studies of screening make their judgments based on changes in the death rate from the cancer being screened for. In our jargon, they measure cancer-specific mortality. In order for people to “live longer,” however, the overall rate of death must fall—deaths from all causes combined. We call that overall or all-cause mortality.

The distinction between cancer deaths and all deaths was highlighted in a recent long-term follow-up of the Minnesota Colon Cancer Control Study—another herculean study of roughly 50,000 people followed for fifteen years. The study was not investigating screening colonoscopy; it was investigating screening for fecal occult blood (a simple test for blood in the stool—often referred to as “stool cards”). Its findings were published in 1993: annual screening reduced colon cancer mortality by 33 percent. It is one of the most influential randomized trials of screening. It’s a classic.

In 2013, the investigators published a long-term follow-up: thirty years following the initiation of screening. By now, most of the participants had died; they were between ages fifty and eighty at the start of the study. In the group that wasn’t screened, 3 percent died from colon cancer. In the screened group, 2 percent died from colon cancer. In other words, screening reduced the rate of colon cancer death by one-third—that’s the 33 percent reduction.

There is a nice graph showing the effect over time. The vertical axis shows the proportion dying from colon cancer, the horizontal axis shows the time from the start of the study: from zero to thirty years. The curve for both groups rises over time as more people die from colon cancer. So even in the screened group, people died from colon cancer. Again, that’s the birds. But the curve for the screened group rises more slowly than does the curve for those not screened. At the end of thirty years, the curves end at 2 percent and 3 percent. That’s the effect of catching rabbits; that’s the benefit of screening.
But there was also a second graph. It too depicted death over time, but in this case it showed the proportion dying for any reason—overall mortality. The curves for the screened group and the not-screened group are right on top of each other. In fact, it just looks like one curve. That means the overall rate of death was exactly the same. Each year the proportion who died was the same for both groups. At the end of thirty years, the curves end at 71 percent and 71 percent. Screening didn’t help people live longer. Not even a little bit.

How can that be? Two possible explanations exist: optimistic and pessimistic. The optimistic explanation is chance. While one might expect the overall death curves to end at 70 percent for screening and 71 percent for those not screened—to reflect that 1 percent difference in colon cancer death—by chance it didn’t happen that way. The pessimistic explanation is that while screening lowered the rate of death from colon cancer, it also increased the rate of death from other causes. A lot happened to the screening group (tests, procedures, and so on) and a lot of it happened to those not destined to die from colon cancer. Remember: screening must involve many, to potentially help a few. A tiny increase in death among the many could wipe out the larger benefit to the few.

Don’t you wish we knew more? Don’t you wish we could know for sure that “screening saves lives”?

I can imagine some of my epidemiology professors howling at me.

“Gil, you cannot possibly expect to demonstrate that cancer screening lowers overall mortality! There are simply too few deaths from any particular cancer—and too many deaths from other causes—to ever show that screening actually helps people live longer. The effect of screening on all deaths is expected to be so small, that a study powerful enough to demonstrate it would require hundreds of thousands—perhaps millions—of participants.”

All true. But then we should dump the “screening saves lives” language. We should publicly acknowledge that we cannot be sure whether
early detection lengthens, shortens, or has no effect on how long people live. And we should be clear that if it takes so many people to find out for sure, then the benefit must be, at best, small.

Or we should suck it up and do the humongous studies.

In case you are wondering, we can say with certainty that some “treatment saves lives.” Treatment is different than screening. Remember: treatment involves only a few—the few with disease—all of whom can potentially benefit.

In breast cancer, for example, we can even measure the effect of adding chemotherapy or hormonal therapy to surgical therapy. These interventions lower not only breast cancer mortality; they lower overall mortality. How can we show that patients treated with chemotherapy and/or hormonal therapy live longer—period, end of sentence? Because the patients in the studies all have cancer. Their baseline risk of breast cancer death is high. Breast cancer mortality is a big component—by far the biggest component—of their overall death rate.

There is only one cancer screening test that has definitively been proven to help people live longer: lung cancer screening in heavy smokers. Why? Because heavy smokers face a twenty- to thirty-fold increased risk of lung cancer death. In other words, for heavy smokers, lung cancer is a big component of their overall death rate.

The beneficial effects of population-wide screening are small. Its effect on longevity is uncertain. But no matter how small and uncertain, I believe a few people—on the order of 1 per 1,000—win big. Maybe you are that 1—but you are certainly more likely to be one of the 999. Nevertheless we'd all do it for the chance to be that 1, if nothing bad happened to the others. We'd all do it if there were no harms.

But there are.

SCREENING HARMS—FEAR

Let me start by acknowledging that some of my critics would object to my use of the word “harm” in the next few pages. I warned you there
might be some value judgments here. You’ll need to decide how you feel about the three adverse outcomes related to screening.

First, to get people interested in screening in the first place we have to get people to worry about the disease we are screening for. The phrase typically used to describe this effort is to “raise awareness.” It’s a nice euphemism—but it really doesn’t describe what needs to be done: some “dis”-ease needs to be introduced into the population. In other words, people need to be scared about dying from the disease; they need to be made to feel more vulnerable.

You may not consider that a harm, but remember health is not simply a state of physical being—it’s also a state of mind. It’s more than a little ironic for a health-care system to scare people about their health, particularly when we know that doing so can adversely affect their health.

I’m not saying we should never purposely scare people—just that we need to carefully pick and choose. Fear is an integral part of antismoking campaigns. That’s appropriate. For those who care about population health, there is nothing more important than reducing the amount of cigarette smoking. There’s not only that twenty-to-thirty-fold increase in the most common cause of cancer death in the United States (lung cancer); there’s also the doubling in the most common cause of death, period (heart disease), and the virtual certainty that smokers will develop some difficulty breathing if they live long enough. Aside from scaring people, there’s no harm to the proposed intervention: stop smoking or, more importantly, don’t start.

But fear can backfire—and breast cancer screening is the poster child for the problem. Some women have been made so terrified of the disease, that they are having healthy breasts removed. I’m not referring to Angelina Jolie’s decision to have both breasts (and ovaries) removed—she had a rare mutation that dramatically increases the risk of breast and ovarian cancer. I’m referring to women without the mutation, women at average risk for breast cancer. In the United States (and the United Kingdom), about one-quarter of women who develop breast
cancer in one breast now ask for both to be removed. A few—to emphasize, a very few—will die from that decision. The thirty-day mortality rate from mastectomy is about a quarter of 1 percent. They will have been literally scared to death.

There is an enormous climate of fear, whether that’s from Breast Cancer Awareness Month or the news media the other 11 months of the year. The only thing you ever hear about breast cancer is about some woman who’s dying because she didn’t get treated in time.

That’s not me talking, that’s a breast cancer surgeon—the chief of the Breast Service at Memorial Sloane Kettering. She’s worried about scaring women too much.

It is certainly reasonable to ask the question: To what extent should the health-care system be promoting a sense of vulnerability in people who feel well?

SCREENING HARMS—FALSE ALARMS

Second, come back to how the odds are stacked against screening: many (often thousands) must be tested, to potentially benefit a few. Any harms from the testing process—false alarms, complications of diagnostic procedures, etc.—are multiplied since so many people are going through it.

Once again, breast cancer screening is the poster child for the problem. What is most certain about screening mammography in the United States is that it leads to a lot of false alarms: worrisome mammograms, and yet subsequent testing—another mammogram, an ultrasound, an MRI, and/or a biopsy—ultimately finds no cancer. For example, among 1,000 American women age fifty screened annually for a decade, how many will have at least one false alarm? Somewhere between 490 and 670. And 70 to 100 will be biopsied to prove they don’t have cancer. These data come from the mammographers themselves—the Breast Cancer Surveillance Consortium—and reflect radiologists with low and high false-alarm rates (25th and 75th percentiles).
A screening program that alarms half the population is outrageous. No European country would tolerate it. Whether you blame the doctors or the system or the malpractice lawyers—it’s a problem to be fixed. Reducing false alarms is the primary motivation for changing recommendations from annual to biennial screening.

I can’t really do justice to the topic of false alarms following mammography. But the affected women can. When I have a piece pointing out the limitations of mammography in the general press, I get letters like this:

I am a 66-year-old woman who has had a difficult experience with mammography over the past 20 or so years. For some reason, I have a strong tendency to develop calcifications, most of which they feel the necessity to biopsy. I dread every annual mammogram because the likelihood is very high that something will have to be checked out. So far nothing has been wrong, but I have had one open biopsy and three stereotactic biopsies. The last of those biopsies produced an incidental finding of a papilloma, which they decided to do a “lumpectomy” on because one in ten can hide cancer. The surgery did not go well; they informed me they missed the spot and would have to redo the surgery. Two days later, they decided they had indeed operated on the right area and that there was no cancer in the papilloma. No cancer, but extreme trauma to the patient and a developing panic problem with regard to the whole issue for which I will now be seeing a psychologist.

Or e-mails like this:

I am a PhD in economics and was able to read the medical literature on the usefulness of biopsies when mammography shows the breast conditions that mine did. I concluded that it was extremely unlikely that I had cancer and, because of illness my husband was facing at the time, I wished to at least postpone the biopsy, but I could not find any support for this decision. All the doctors and nurses I talked with were almost hysterical at the idea that I would not have the biopsy, acting
as though I was giving myself a death sentence. “It’s no big deal,” they said, “non-invasive.” “Nobody gets a second opinion for a biopsy.” One of the authors of the most illuminating article I’d seen actually practices in my area and so I thought I’d be able to get support from her. But it turned out to be impossible to consult with her without making an appointment for a biopsy(!).

When I got there, it was like an assembly line. I was stripped and paper-gowned and sent to a waiting room with several other women who were ahead of me. It was obvious that the doctor was someone who had discovered the profit motive since her more-philosophical days when she’d written the article. She said, “Well, probably the best reason to go ahead with the biopsy is that you are here.” I don’t know why I succumbed at that point, maybe just exhaustion from having to take on the entire medical profession single-handed.

The procedure did not go well; the granules she was looking for were so small that she couldn't find them on the first or second pass. And sticking a 1/2” needle through my breast seemed pretty “invasive” to me. Immediately afterward, they had me get another mammogram which squeezed the band-aid off the wound and caused blood to squirt out. Because of the difficulty in finding the material to biopsy, my breast was bruised badly for weeks on the side opposite where the needle had entered. I used to be someone who went bra-less a good deal of the time, but for the next 5 years, I almost always wore an athletic bra that held my breasts tight against my chest. When the doctor called to tell me the biopsy was negative, she seemed completely unaware of the irony when I said, “Yes, we knew that would be the case, remember?” Since I never want to be in that vulnerable situation again, I have not had another mammogram.

I think the screening culture has had a tendency to downplay the problem of false alarms—even trivialize the discomfort and anxiety by juxtaposing it with the need to “save lives.” But it matters. Maybe it goes without saying: fear and pain is not good for human health. Medical care needs to work on reducing psychological stress—not creating it.
A number of women have told me they stopped mammography because they got so tired, frustrated, scared, or angry about false alarms. And recent research has documented that the psychological effects—anxiety, negative impact on sexuality and sleep, loss of inner calm—persist for at least three years following a false alarm. Of course, it doesn’t affect every woman the same way. Some may initially fear for their life only to be told a few days later that everything is fine. They are thankful and may even feel that the experience has given them some important new perspective on life. Others are left in limbo. While told they don’t have cancer, they are not told that everything is fine. Instead they learn their breasts are somehow abnormal—that they have dysplasia or atypia, that they are at “high risk”—and can only worry because the doctors aren’t doing anything about it. Nothing, except more mammograms.

**SCREENING HARMs—OVERDIAGNOSIS**

Finally, screening produces the harm of overdiagnosis. While the term sounds like it simply means “excessive diagnosis,” it has a more precise definition in cancer screening. Overdiagnosis occurs when a cancer is diagnosed, yet the cancer is not destined to cause symptoms or death. Overdiagnosis does not imply misdiagnosis: the cellular abnormality found does, in fact, meet the pathologic criteria for cancer. And overdiagnosis should not be confused with a false alarm: patients with false alarms are told they don’t have cancer and *are not* treated; overdiagnosed patients are told that they do have cancer and *are* treated.

Whenever doctors screen for cancer we end up treating a lot more people than we would otherwise. We look hard for early forms of cancer, we find more “cancer,” and we treat more “cancer.” By now you are surely wondering: What does that word mean? Dr. George Crile—a cancer surgeon at the Cleveland Clinic—thinks about it this way:

> In clinical practice, to say that a person has cancer gives as little information about the possible course of his disease as to say that he has an infection. There are dangerous infections that may be fatal and
there are harmless infections that are self-limited or may disappear. The same is true of cancers. Cancer is not a single entity. It is a broad spectrum of diseases related to each other only in name.

Amazingly, that statement appeared on the pages of *Life* magazine in 1955—the year I was born—a rude reminder that I’ve never had an original idea in my life. Crile may, in fact, be the originator of the barnyard-pen analogy—although I can’t confirm that. I can confirm, however, that Crile would definitely get the turtle problem: the cancers that aren’t going anywhere anyway.

It’s the turtles that make overdiagnosis possible. Practically speaking, we only find turtles by screening. (A cancer that becomes clinically evident—because of either signs or symptoms—is, by definition, not a turtle.) But screening also identifies some rabbits and few birds. Since we doctors cannot reliably distinguish which animal is which, we treat them all—“just to be safe.” That means screening leads us to treat turtles. If your cancer is a turtle, however, you can’t be helped by treatment—because there is nothing to fix. But you can be hurt by treatment. Finding and treating turtles: that’s the problem of overdiagnosis and overtreatment.

You want a feel for the problem? You want narrative? It would go something like this:

I am a middle-aged [pick one: woman/man] who was encouraged to participate in [pick one: breast/prostate] cancer screening by [pick one: my hospital, my health plan, a television news story, a radio “public service announcement,” an advertisement, a celebrity, or a sportscaster]. My screening led to the detection of a small cancer for which I received [select from a menu of combinations: surgery, hormonal therapy, chemotherapy, radiation]. Because of complications from my therapy, I do not feel as well now as I did before this whole thing started. Imagine how angry I became to learn I went through all this for nothing—my cancer was not going anywhere anyway.
Of course, that’s a fictional narrative. Nonfiction versions are rare. That’s because once someone has been treated, no one knows for sure who has been overdiagnosed. We know some have—because we are treating so many more than would ever develop clinically evident cancer—we just don’t know which ones. But the new patients understandably choose to see themselves as having benefited—they see themselves as survivors. The absence of compelling patient stories about overdiagnosis means the idea remains unfamiliar to the general public, but it doesn’t mean the harm is any less real.

When it comes to overdiagnosis, prostate cancer screening is the poster child. There are a whole lot of prostate cancer turtles. And the older men get, the more turtles there are. By age sixty, over half of men are found to have small prostate cancers on autopsy—even though they will have died from something else. Screening doesn’t find all of these small cancers, but it finds a lot of them. And when a prostate cancer is found, the primary treatment is to remove the prostate.

No one wants unneeded treatment. But unneeded removal of the prostate is particularly problematic. I’m not saying that because of my sex; I’m saying that because of human anatomy. The prostate gland sits deep in the pelvis. It’s wrapped around the urethra—the tube that drains urine from the bladder to the penis—and wrapped around it are nerves en route to the penis. Suffice it to say, the prostate was not designed for easy removal.

Guys, think of it like removing the heater core in your car. It’s not easy to get to either. You gotta take the dash off and that means disconnecting a lot of vacuum lines and electrical wires. If you need help, check out the “how to replace a heater core” videos on YouTube. A comment on one video captured the challenge nicely: “I’d rather start a small controlled fire in the car for heat each time I drove it in the winter instead of attempting this.”

To be fair, the surgeons have gotten reasonably good at it. Nevertheless, somewhere around half of men will have some complication following the procedure. These complications reflect the underlying
anatomy: plumbing problems (leaking or difficult with urination) and electrical problems (sexual dysfunction).

I was reminded of one other problem to consider when I ran into a colleague at our local recycling center (which, here in the People’s Republic, serves as the major venue for social interactions). Bob told me about a friend who was screened for prostate cancer, found to have it, and then underwent surgery. Following surgery, he had a blood clot go to his lungs and died. He was fifty-eight (that’s my age, margin of error: ± 2 years). So the effort to address a finding that may—or may not—become a problem in the future, leads to a death that happens now.

Anesthesia, surgery, and a period of bedridden recovery can all combine to produce life-threatening complications. I want to be clear: this happens rarely—the thirty-day mortality rate from prostatectomy is about one-half of 1 percent (and lower for minimally invasive prostatectomy). But just because it happens rarely, doesn’t mean that it doesn’t happen.

Overdiagnosis and overtreatment is very common in prostate cancer screening. In the twenty-plus years of screening, it’s happened to more than a million American men. Roughly half have suffered a plumbing or electrical problem from treatment for a cancer that was never going to bother them. And a few, a very few, have died. But screening doesn’t discriminate based on sex: in the thirty-plus years of breast cancer screening, more than a million American women have been overdiagnosed and overtreated.

The morbidity and complications of unneeded cancer treatment represent the major harm of overdiagnosis. However, two other observations are worth mentioning. First, the emotional burden of cancer diagnosis can be overwhelming for a few: cancer patients face an increased risk of suicide (even among low-risk prostate cancer patients). Second, the financial burden of a cancer diagnosis is overwhelming for many: cancer patients face an increased risk of bankruptcy. Two more reasons to think twice about looking for turtles.

Your intuition might suggest that there is no downside to looking for early forms of cancer—it can only help. But this intuition is wrong.
Arguably, the opposite is more plausible: there is no upside—it can only hurt. Think of what needs to happen for a screening test to even have a chance of working for the few it could help. Everyone must be made concerned enough to get screened, everyone must be tested, many retested and needlessly alarmed, while others are overdiagnosed and overtreated.

In other words: it’s the harms that are certain, not the benefits.

THE FINAL BLOW: THE TYRANNY OF PERFORMANCE

There has been a long-standing subculture in medicine interested in improving the quality of health care. Who can argue with that? Simultaneously, there has been an increased interest in measurement: to carefully document what is actually happening out there. I’m part of that subculture—so, of course, I think it’s a good thing.

The problem arises when the two subcultures converge to attempt to measure quality. While this is conceptually straightforward, the operational details get fuzzy quickly. Though we might be able to agree about what true quality is—a doctor who takes the time to figure out what is going on with you, has the skills to make the right diagnosis and treatment plan, works as part of a system that can reliably carry out that plan, and is both supportive and able to meet your needs as you heal—the problem is that these attributes are not readily apparent in the electronic medical record. Furthermore, different doctors will have different definitions of what constitutes “the right diagnosis and treatment plan,” and different patients will have different definitions of what constitutes “supportive and able to meet your needs.” True quality is extremely hard to measure.

What is easy to measure is whether doctors do things. Doing things generates a bill; a bill generates electronic data. All the combined culture of quality-plus-measurement needed was to identify things that doctors should do to every patient. Things that everyone agreed were important to people’s health. Like screening.
Let the PhD economist—whose breast biopsy “did not go well,” who never wanted to “be in that vulnerable situation again,” who did not want another mammogram—take it from here:

I joined Kaiser a few years ago, foolishly thinking that they would be more in agreement with my own minimalist attitude toward all things medical. The nurse in my doctor’s office harassed me for months, e-mailing me and calling my home phone and my cell, leaving messages, pleading with me to get a mammogram and implying that my failure to do so would almost guarantee that I will die of breast cancer. This continued despite me explaining clearly to both the doctor and nurse my reasons for not getting a mammogram. I finally changed doctors (within Kaiser) and have had no more phone calls. But I’m sure it is as you say in the article, that Kaiser too is using the number of mammograms as a measure of “quality of care.”

Persistent e-mails and phone calls after declining a mammogram? That’s not quality; that’s harassment. Suggesting that her decision will lead to breast cancer death? That’s not quality; that’s intimidation (not to mention fraud).

OK. Now I have to do something I don’t like to do: criticize what I think is otherwise one of our better health-care systems—Kaiser Permanente (a large prepaid group practice originally created as a way to provide medical care to workers and their families at the largest construction site in history—the Grand Coulee Dam). It’s the same way I feel when I criticize my former employer of many years: the VA. Because both systems depend on salaried physicians, both provide a healthy alternative to the excesses of fee-for-service medicine. Both have a laudable interest in delivering quality care; both have created undesirable side effects in their effort to do so.

The problem is the blunt performance measure: one in which doing something is always the right answer. To be fair, the performance measures typically come from a higher level—such as the National Committee for Quality Assurance. But, to be equally fair, both systems have chosen to sign on to them—rather than question them.
Screening mammography was one of the original performance measures for comprehensive health-care systems: one grade on a “health care report card” first created during the early 1990s. Kaiser wants to perform well; Kaiser wants to get good grades.

A few years ago, Health Affairs asked me to review a manuscript detailing Kaiser’s efforts to improve mammography performance. It described interventions to reduce the wait time for a mammogram, strategies to maximize each machine’s “throughput,” mechanisms to “give credit” to primary care physicians (including small financial incentives for physician groups) or mechanisms to hold them “accountable,” the development of new electronic data systems to prompt mammography, and efforts to contact women via both a letter and an automated phone contact. That’s right: robocalls.

It went on to detail the discovery of another approach to “maintain the energy and focus on improving (screening) rates”—the power of patient stories. They made a video of one woman whose “breast cancer was detected early after a receptionist in Ophthalmology persistently encouraged her to get a mammogram, despite the woman’s continued reluctance to do so.”

That’s not quality; that’s a violation of medicine’s fundamental ethical principle: patient autonomy. While there may be a public health imperative to screen selected populations (e.g., doctors) for selected infectious diseases (e.g., tuberculosis), that’s because an infection in one individual affects the chance of it developing in another. But that is not the case for chronic disease: my having cancer doesn’t affect your risk of cancer.

Cancer screening is not a public health imperative, it is a choice. The reason is that it is a close call: a delicate balance of benefits and harms that different individuals—facing the same situation—can rationally make different decisions about based on their values and preferences.

TURTLES MAKE SCREENING LOOK GOOD

Ironically our cancer statistics tend to hide the close-call reality and paint a rosy picture instead. It’s the turtles’ fault. Here’s how it works.
Because of the existence of turtles, screening finds more cancers than would otherwise be found. This shows up in our statistics as higher cancer incidence rates—the number of cancers diagnosed per million people. This worrisome rise in incidence leads to calls for more screening. That’s misleading, because we are inevitably finding more and more turtles that have always been there.

But what is much more misleading is that now the typical cancer patient does much better. This shows up as higher survival rates—the proportion of cancer patients who are alive five or ten years after diagnosis. That’s really misleading: just by finding more cancers not destined to cause death, it looks like something really good is happening. Of course survival rates go up if you add in patients with cancers that were never going anywhere anyway. Screening gets credit for curing turtles.

I know how to design a blockbuster screening test. Have it find cancer in everybody. In a few months, I’ll be able to legitimately say we have a new cancer epidemic on our hands. A few years later, I’ll point out that the survival rates are damn near 100 percent. All thanks to me.

Statistics can be mind-numbing. A lot of folks respond better to narrative. Luckily turtles not only make great statistics, they make great stories. The turtles make for powerful witnesses—cancer survivors—that constitute perhaps the most misleading information in all of medicine. Everyone has heard survivor stories on the news; increasingly many of us have a more personal exposure: a coworker, a neighbor, a friend, or a family member. Nowhere is that more true than in breast and prostate cancer.

As I write this, Amy Robach has just announced she has breast cancer. She is an anchor for Good Morning America. As part of breast cancer awareness month, the forty-year-old had her first mammogram—on morning television. A month later, in front of five million viewers, she announced that she had cancer and said, “Having a mammogram saved my life.”

That’s powerful. Who can argue with that?
But what we don’t know about Ms. Robach—or our coworker, neighbor, friend, or family member—is whether she actually benefited from early detection. It is entirely possible that she and others would have done just as well had their cancer been diagnosed following the appearance of signs and symptoms. It’s also possible they were overdiagnosed: the cancer was never destined to kill them or even make them sick.

Let’s give screening the benefit of the doubt. Ignore the question of whether it truly “saves lives”; simply assume it does. Now compare the number of lives saved to the number overdiagnosed. In its pamphlet to help women decide about mammography screening in the United Kingdom, the National Health Service now explicitly tells women their chance of overdiagnosis is about three times higher than their chance of avoiding a breast cancer death. That makes the “lives saved to overdiagnosed ratio” 1:3.

Note these are the numbers from the folks who run—and who promote—the screening program. They are basing their lives saved data on twenty-to-thirty-year-old trials that likely overestimate the benefit of screening, and their overdiagnosis data are based on UK diagnostic practice—which is more prudent than US practice. Given current conditions, my estimate of the ratio in the United States is closer to 1:10.

Everyone agrees overdiagnosis is a bigger problem for prostate cancer screening. There are simply more turtles in the prostate. The most favorable “lives saved to overdiagnosed ratio” here is 1:30. The more pessimistic is 1:100.

Sorry, that’s a lot of ratios: 1:3, 1:10, 1:30, 1:100. But they all have one thing in common: more people are on the overdiagnosed side.

Now think about a survivor story following breast or prostate cancer screening. The standard explanation is that her or his life was “saved” by screening. As you can now see, however, the much more likely explanation is that she or he was overdiagnosed. So what is happening is that one of the harms of screening is being misinterpreted as a benefit.

Finding turtles is harmful; don’t give us credit for curing them.
CIRCLING BACK TO ORAL CANCER

So what would oral cancer screening look like? The first step will be to raise awareness about oral cancer. That campaign should be straightforward: the eight thousand deaths a year is as good a place as any to start—but don’t provide any context by saying anything about the nineteen competing cancers that are a more common cause of death. Superimpose the body count message on a few high-res photos of some advanced—and preferably, particularly gruesome—oral cancers. Say nothing about their strong relationship to heavy alcohol exposure and cigarette smoking—that would narrow the audience too much. And it goes without saying: simply assert (or at least imply) that screening will help.

Teach the dentists how to examine everyone thoroughly. They’ll need some better equipment: we can’t trust their fingers and naked eyes. Special lights will help, special stains and mouthwashes, maybe even immunofluorescence, and, of course, special biopsy tools. Lots of opportunities for device manufacturers here.

The dentists will start on their regular patients at first, some of whom will not even know they are being screened. The American Dental Association may even make oral cancer screening a performance measure for their current patients. The dentists will quickly see that it is in their interest to extend screening more broadly. They will offer free screening days, knowing that their long-term effect will be more repeat examinations and more biopsies—neither of which will be free. The oral surgeons will quickly have more cancers to operate on. Some of the operations won’t go so well.

My tribe—the epidemiologists—will soon note that the incidence of oral cancer (and oral pre-cancer) is rising. Some will be worried and someone, somewhere, will play the epidemic card. Websites will pick it up, and so will Dr. Oz and the rest of the medical self-help and infotainment industry. There will be some voices urging caution, but they will be government or academic types and their messaging clumsy at best. Keep it simple, stupid: early detection saves lives.
At this point, people will start worrying about canker sores in their mouth.

And then the coup de grace: the survivor stories will appear. Someone famous will have their oral cancer caught early and will become a spokesman for the effort. Oral cancer survival rates start going up—providing the scientific proof that good things are happening.

Is anything good happening? Perhaps, but I'm certainly not sure. Is anything bad happening? You tell me. And if you think this is too fanciful, you should know this scenario is what played out in prostate cancer screening.

A NEW CONCEPTUAL MODEL

Maybe I'm painting too pessimistic a picture. More and more people get that screening is more complicated than it appears at first blush. More people understand that early forms of cancer are more common than advanced forms. More appreciate that treatments often produce problems. More grasp how misleading survivors—and survival statistics—can be. And more and more of these people are doctors in the field. They increasingly recognize that cancer screening is a choice, not a public health imperative.

And cancer researchers really are looking at cancer differently. They understand the barnyard pen of cancer—and are even considering adding another animal to it. It turns out that some cellular abnormalities that meet the pathological definition of cancer will go away on their own. Disappear. Regress. Become extinct. Call them the dodos.

Dodos were first recognized in a rare cancer of young children: neuroblastoma. These cancers, which generally start near the kidney, make adrenaline-like substances. Some grow as large as a grapefruit (which in an infant is huge), some invade major blood vessels (like the aorta), and some metastasize to major organs (like the liver). Some are birds, while others go away.

The dodos were recognized when doctors explored screening for neuroblastoma. The doctors found more infants had the cancer than
they expected and worried that they were treating too many infants with surgery and chemotherapy. So they simply observed some infants with small cancers. No treatment at all. And their cancers disappeared. The dodo phenomenon has been observed in other cancers: renal cell carcinoma, melanoma, even early breast cancer.

This gets geneticists thinking in a new way. They have been frustrated that detailing a cancer’s genetics wasn’t more help—that, for many cancers, no single genotypic “marker” provided a dominant, reproducible signal of “badness” or “goodness.” In short, the genes in a cancer often can’t reliably distinguish between the birds, rabbits, turtles, and dodos.

I went to a conference with a bunch of cancer geneticists a few years back. There were presentations on sequencing, structural rearrangements, microarrays, multiple clones, and genomic instability. Some of it was tough sledding for me, but I did get their frustration: if the question was cancer, the genome wasn’t the answer. Then there was a presentation on zebra mussels.

Zebra mussels? The invasive mollusk that infested the Great Lakes and now clogs the intake pipes of water treatment and power plants? It was a great story—I was particularly fascinated by how they had spread from the Caspian Sea in the ballast water of ocean-going ships—but what the hell did zebra mussels have to do with cancer?

Because the next basic science of cancer is ecology. The presentation was given by an oncologist/cancer biologist who wanted to know what the conditions needed to be for a cancer to metastasize—say from the Caspian Sea to the Great Lakes. He argued that it was increasingly apparent that the lethality of a cancer is not simply a function of the cancer itself but also something about the environment in which the cancer lives—the host environment. He articulated an emerging view that the reductionist approach—learning more and more about the fine structure of cancers (from the individual cells to the genetic code within them)—was too narrow. Researchers needed to consider the ecology of cancer.
Oddly enough, Sir David Smithers, a radiotherapist in London, presaged this view in 1962:

Cancer is no more a disease of cells than a traffic jam is a disease of cars. A lifetime of study of the internal-combustion engine would not help anyone understand our traffic problems.

I get it: You can’t learn much about what causes gridlock by studying the fine structure of piston clearance. The title of one of Dr. Smithers’s articles captures it all: no cell is an island.

Understanding cancer requires understanding the human ecosystem. Reducing cancer burden is undoubtedly more about keeping that ecosystem healthy, not devising new ways to find smaller and smaller collections of wayward cells.

**PRESCRIPTION: ASK FOR DATA—ABOUT BOTH BENEFITS AND HARMS—AND KNOW IT’S A CHOICE**

When considering screening, recall the general principles. Many must be involved, to potentially benefit a few. Harms are expected: false alarms are a certainty; some degree of overdiagnosis—and overtreatment—is likely.

I’m not saying screening is always the wrong thing to do. (I believe we all should know something about our blood pressure and weight, but whether that requires screening is a separate question.) Instead I’m saying that because screening may cause you some harm, you have to make sure not only that it produces some benefit—but that it produces sufficient benefit to warrant accepting the possible harms.

The first question to ask is obvious: Is there good evidence of benefit? Good evidence means a randomized trial showing lower cancer mortality, not observations crediting turtles with higher survival rates. Frequently, the honest answer will be no. If so, I’d stop there. If benefit hasn’t been proven, I wouldn’t pursue the test—because harms are always part of the deal.
If there is evidence of benefit, the decision gets more complicated. Now it's a gamble. Ideally, you would like some numbers. How many benefit? How many are harmed? Remember the benefit is a big win—avoiding a cancer death—but it is rare. You need to decide how you feel about the uncertainty in the “saving lives” language, the uncertainty about all-cause mortality. Consider how you value the harm of overdiagnosis and overtreatment relative to the benefit of avoiding a cancer death—knowing that this harm is generally more frequent than the benefit. Finally, you also need to decide how you feel about the much more common—but arguably much less important—harm of false alarms.

In case it helps, here’s how I think about prostate cancer screening. I believe that it does help a few men avoid a prostate cancer death—on the order of one per one thousand men my age (I’m close to sixty) over the next ten years. The overdiagnosis and overtreatment problem is much more common—on the order of, at least, thirty per one thousand over the same period. Sexual and urinary function is something I value highly—even if these functions are compromised in only ten of those thirty, I’d say it’s a bad deal. Ten times more likely to have an unnecessary sexual or urinary problem than avoid a cancer death? I don’t even need to factor in the false alarm and biopsy problems.

And although I’d say the call is closer for mammography—because overdiagnosis is not as common and overtreatment not as morbid—I believe I would ultimately come to the same judgment were I a woman.

But that’s me. I tend to mark down the benefit of screening because it happens in the future, while the harms are much more immediate. Avoiding death isn’t my top priority anyway; I’d rather avoid a lingering cognitive decline in a long-term care facility (not that I’m likely to be successful). And I place considerable value on not having my life become medicalized—until my symptoms demand it.

You may well choose to be screened. For a small group of individuals the screening deal is much better: those at very high risk of dying from the cancer being sought—and those at a relatively low risk of dying from something else. But even those at average risk can look at the
same numbers and come to an equally rational conclusion: they may choose to be screened.

If you do choose screening, here’s one idea to help minimize the harms: take your time. What should you do if your screening test is a bit abnormal? Take your time. Often the best strategy is simply to repeat it in six months. Time has real diagnostic value. What should you do if you are found to have early cancer? Take your time. We have overstated the need to act quickly. Find out the options. Get second opinions—an independent opinion—not one from someone who is almost certainly bound to echo the first.

Finally, while the chapter was focused on cancer screening, know that these principles apply to screening in general. There’s a lot of screening out there: carotid artery screening, coronary artery screening, abdominal aortic aneurysm screening—and that’s just for your arteries. When we screen, we always find more, treat more, and treat some needlessly.

The truth is, screening is a mixed bag. There will be winners and losers. It makes more sense for some diseases than others and it makes more sense for some individuals than others. But it should always be an informed choice.