

Plan Your Scans CTs do save lives, but they can also lead you down expensive (and scary) rabbit holes.

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HEALTH

It's all right letting yourself go, as long as you can get yourself back.

—Mick Jagger



Is This Medical Test Overused?

Nearly a third of the 80 million CT scans done each year may be a waste of time and cash. Here's how to tell if you really need one.

BY MICHAEL EASTER

»» —————> The pain woke me up in the middle of the night. It felt like a strongman twisting a rigid finger deep into my abdomen. It just wouldn't quit. By morning it was still there as a persistent, low-level ache, so I went to see a doctor. She prodded my stomach as I answered a few questions. With the exam over, we locked eyes and she said, "You need to go to the hospital for a test right away."

Lying in the computed tomography (CT) machine, I convinced myself that I had cancer. Later a nurse broke the news.

"We got your results," she said. "You're fine." The pain eventually fizzled out. But it returned months later, after a tough workout. That's when it hit me: Both times, I'd done CrossFit that day. Bingo! I had a muscle strain from doing barbell front squats. (My form can be shaky with those.)

But here's the thing: Unlike my muscle strain, that CT scan may have lasting effects. More than 80 million CT scans are performed on Americans each year—a four-fold increase since 1995.

"CT scans are a keystone of modern medicine," says David J. Brenner, Ph.D., a radiation researcher at Columbia University Medical Center. In minutes, a CT scan can deliver a 3D image of what's inside your body, allowing for a more accurate diagnosis. "It's such a powerful tool there's a strong temptation to use it in too many situations," says Brenner. "But these are x-rays, after all, so they do come with a small risk."

My test delivered a dose of radiation to my abdomen that was triple the level associated with cancer risk. At age 30, I now have about a 1 in 727 lifetime risk of developing cancer from that scan, according to research in the *Archives of Internal Medicine*. Those odds are relatively small, sure. But I'm now slightly more cancer-prone than I was before, which feels like leaving a weight-loss clinic 5 pounds heavier. Oh, and my co-pay was \$1,500.

I believe my scan was unnecessary. "An estimated 27 million CT scans done last year in the United States either didn't need to be done or could have been replaced by another procedure involving less radiation," Brenner says.

The most common reason for needless tests, according to a poll of physicians by the American Board of Internal Medicine Foundation, is to avoid malpractice suits, followed by simply wanting to be safe.

While you're in a CT machine, hundreds of radioactive x-rays pass through you. For a routine head scan, you're hit with 2 millisieverts (mSv) of radiation; a multiphase abdomen-pelvis scan delivers 31 mSv. In a study of atomic bomb survivors in Japan, exposures above 5 mSv raised cancer risk.

A man's chances of getting the big C from one CT scan is low—at worst, about 1 in 330

ALL SYSTEMS GLOW

We're naturally exposed to about 3.6 millisieverts of radiation yearly; a one-time dose of 5 mSv is linked to cancer. Most CT scans deliver far more. Here's the radiation fallout from various tests, and the associated cancer risk for a 40-year-old man.

2 mSv
ROUTINE HEAD CT SCAN
1 in 11,080 cancer risk

8 mSv
ROUTINE CHEST CT SCAN (WITH CONTRAST)
1 in 1,538 cancer risk

22 mSv
CORONARY ANGIOGRAM
1 in 595 cancer risk



BEING IN CLOSE PROXIMITY TO SOMEONE WHO'S JUST HAD A NUCLEAR MEDICINE TEST
5 mSv



FLIGHT FROM N. Y. TO L. A.
.05 mSv



WATCHING TV
.02 to .03 mSv per year



BASELINE LIFETIME CANCER RISK FOR MEN
1 in 3

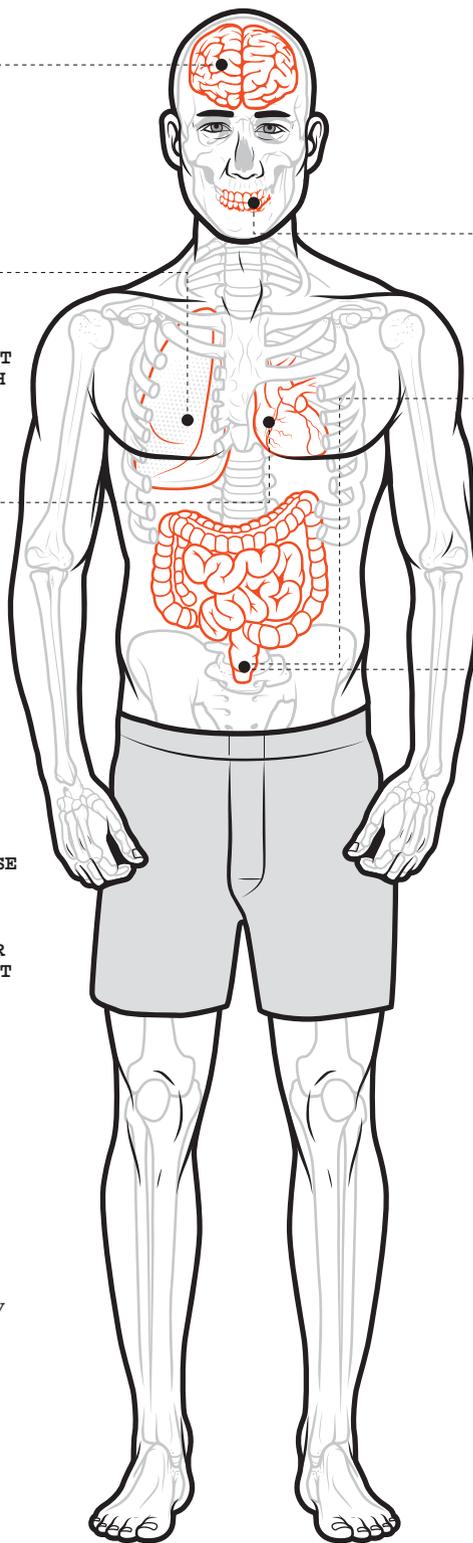
0.4 mSv
DENTAL X-RAYS (FULL SET)

16 mSv
ROUTINE ABDOMEN-PELVIS SCAN (WITH CONTRAST)
1 in 942 cancer risk

31 mSv
MULTIPHASE ABDOMEN-PELVIS SCAN
1 in 498 cancer risk



Radiation exposures can vary "profoundly" among CT facilities, says Rebecca Smith-Bindman, M.D. Her research found patients who'd been exposed to 100 times more radiation than necessary. To protect yourself, she recommends asking the technician to use "the lowest effective dose."





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for a 20-year-old receiving a detailed abdomen-pelvis scan, and 1 in 14,000-plus for a 60-year-old getting a routine head scan, according to the *Archives of Internal Medicine* study. But because docs order millions of scans a year, the numbers may add up in the future to about 29,000 annual cancers—or up to 2 percent of all new cancers, the National Cancer Institute reports.

Many people get multiple scans, which further raises risk. “It’s doubled if you get two, tripled if you get three, and so on,” says Brenner. A third of people scanned have had five or more previous scans, Harvard research reveals.

That’s where the real danger is, says Frank Cucinotta, Ph.D., of the University of Nevada, Las Vegas, who studies the biological effects of radiation. The more body areas hit and the higher the radiation dose, he says, the higher your risk. Your abdomen and chest are the most sensitive, due to the concentration of organs there and the radiation levels needed to yield a clear image.

A rare cancer caused by a scan will take decades to bloom, adds Cucinotta. That’s why CTs are generally riskier for young people; the older you are, the more likely you’ll die of something else before that cancer appears.

There’s also the question of time, stress over the pending results, and the bill you’ll receive afterward, says Vinay Prasad, M.D., an oncologist at the Oregon Health & Science University. There’s no standardized price for a CT scan, and even with insurance you may pay a few hundred to thousands out of pocket. That’s why you should ask how much the scan will cost you and whether it can be done somewhere else for less, Dr. Prasad says.

It’s important to put all these risks in context. “If you need a CT scan for a good medical reason, you should absolutely have it, because the benefits of getting the right diagnosis far outweigh any small risks,” says Brenner. “But if there isn’t a good medical reason, you shouldn’t have that scan.” Consider the following four factors in making that crucial decision.

1 FIT THE CRITERIA

When ordering such tests, doctors have guidelines: the American College of Radiology Appropriateness Criteria (<https://acsearch.acr.org/list>). That includes a whopping 230 clinical scenarios with 1,100 clinical variants. “Ask why a CT is advised, and perhaps add, ‘Does my condition meet ACR guidelines for a CT scan?’” says Brenner.

2 EXPLORE OTHER OPTIONS

In some cases, other types of diagnostic tests may render an adequate image. Ultrasound and MRI have no radiation, and “x-ray has about 100 to 1,000 times less radiation than a CT,” says Cucinotta. For recurring issues like kidney stones, a CT may be needed initially, when accuracy is key. “But after that, some other imaging can usually be used, such as a conventional x-ray or ultrasound,” Brenner says.

3 KNOW YOUR DOCTOR

My scan wasn’t ordered by my regular doc, who was away at the time. My regular doctor knows I exercise, so he may have suspected a muscle issue and had me wait. “When you know your doctor, he or she may be better at recommending or not recommending a scan,” says Dr. Prasad.

4 BE PATIENT, MAN!

CTs are popular because they’re quick and easy and make doctors feel they’re being thorough, says Dr. Prasad. That may be why you’ll likely get one in an ER or urgent care setting. But University of Hawaii researchers found that only 6 percent of CT scans given to people who went to an ER after fainting or nearly fainting showed anything abnormal. The study concluded that ER patients with dizziness or fainting may not benefit from a head scan unless they’re older, have a focal neurological deficit, or had a recent head injury. The same may be true for the neck down: “In young people, a lot of aches and pains are probably musculoskeletal and go away in about a week,” says Dr. Prasad.

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