Advanced radiology tests such as CT scans, MRIs and ultrasounds have dramatically changed how patients are diagnosed and treated. Just a decade ago, patients were still being subjected to exploratory surgery, in which a surgeon cuts open the abdomen to look for problems; today, CT scans allow doctors to make diagnoses without a scalpel.

CTs and MRIs routinely change the course of medical care, often for the better. But their use has become so routine that their lifesaving benefits are being increasingly overshadowed by the risks of overuse. Medical imagination is the fastest-growing source of cost inflation (see PDF) in the Medicare program. Meanwhile, the real value of so much testing has been widely questioned in scientific literature: imaging rates are going up, but doctors are not diagnosing (or necessarily misdiagnosing) more diseases. (See the top 10 medical breakthroughs of 2010.)

The potential risks to patients are also well known. CT scans expose patients to a substantial amount of radiation which can increase the risk of cancer over time. More testing also means more false positives, more unnecessary invasive procedures, more patient stress and higher costs.

So how do we reconcile these competing narratives — of revolutionary medical care vs. the perils of the "imaging boom"?

First we need to understand why doctors order too many tests. The most commonly cited reason is "defensive medicine": the fear of being sued by patients for not ordering a test. Recently, new evidence of defensive medicine was presented at the American Academy of Orthopedic Surgeons conference. The study involved 72 orthopedic surgeons who saw 2,068 patients and reported ordering 20% of their expensive imaging tests "for defensive reasons." This accounted for 57% of bone scans, 53% of ultrasounds, 38% of MRIs, 33% of CT scans and 11% of x-rays.

But while most doctors agree that defensive medicine is a real motivator, its costs are actually difficult to count.
estimates have ranged from as high $650 billion to, more recently, about $56 billion. The dispute is over how much care is really provided to avoid malpractice suits, as opposed to other reasons for excessive care. (See the most common hospital mishaps.)

Certainly, costs are high. But let’s for a moment talk about some of the other motivators for overtesting, like having to stand up in a forum called a "morbidity and mortality" (M&M) conference and talk about mistakes. Dreaded M&Ms, which are held regularly hospitals as a postmortem of failed medical cases, are much more common than relatively rare malpractice suits. Once a doctor has presented an M&M, she will probably never make that same mistake again — but she may start ordering more tests on her patients for minor symptoms. Of course, M&Ms are never held to explain cases in which all the tests a doctor ordered come back negative.

Another reason for overtesting is simply that new doctors can’t function without them. Lately, radiology tests have become a crutch: doctors in training are no longer taught how to distinguish patients who need testing from those who don’t. A decade ago, a surgeon would spend time interviewing and carefully examining a patient to help decide if he or she needed a CT. Now, many surgeons, especially the younger ones, won’t see a patient until the CT is complete. Testing has become more of a reflex than a higher-level decision.

In fairness, CT results can be often better than even a senior surgeon’s medical opinion. It also makes sense for patients: you want your surgeon to be darn sure before they operate on you. (Read "Roundtable: Can We Reduce CT Radiation in the ER?")

According to the recent study of orthopedic surgeons, younger doctors are less likely to order tests for defensive reasons than older, more experienced doctors. On the surface, this is a counterintuitive finding, since one would expect younger doctors to be more afraid of making a mistake and therefore more likely to practice defensively. But could it be that younger doctors are simply less likely to view imaging tests as defensive, considering them instead as the standard way to make a diagnosis?

Of course, no discussion of overtesting would be complete without a mention of the positive incentives doctors have to order tests — such as making money. This may be true in instances in which the doctor owns the radiology equipment, as dentists’ offices do. But whether most individual doctors think in those terms is somewhat less clear. There is actually a more subtle positive incentive: ordering a test — cost aside — takes less effort than spending the time to think about whether it’s really needed.

If you want to know whether your doctor orders more tests to make more money, ask her how much the tests cost, and how much she thinks she makes for ordering the test. Most likely she doesn’t know.

So how do we address the overtesting problem? First and foremost, we need to develop better tests that don’t require expensive imaging. For example, if a simple blood test could be developed to rule out a serious problem without an MRI or a CT, it would save loads of money and resources. (See TIME’s Health Checkup on how to live 100 years.)
In the absence of better tests, we need more evidence about who really needs to be imaged, and that evidence needs to be made more easily accessible. For instance, there's little data to help emergency doctors figure out when to use high-cost CTs to diagnose abdominal pain. When evidence does exist, doctors often don't apply it because it's hard to remember in a busy practice or hectic ER. Testing-decision rules should be integrated through real-time computerization, so doctors can see the evidence every time they consider ordering a test. This may also help retrain doctors to think more about whether a test is indicated and make testing less reflexive.

Further, since patients perceive that care is better when a doctor orders a test, we should make balanced evidence on the risks and benefits of testing available to patients in easily understandable formats, so they can share in testing decisions with their doctors.

We also need initiatives that better balance doctors' incentives. The Centers for Medicare and Medicaid Services is already starting to measure the rates at which doctors and hospitals order tests. Putting such information in the public domain may help rein in some overtesting. Other widely discussed payment reforms that hold promise include reimbursing doctors per episode of care, instead of à la carte, for services: if a doctor gets a fixed price for diagnosing and treating a condition, she stands to lose if she tests unnecessarily. Other models, such as accountable-care organizations, networks of doctors and hospitals that share responsibility for treating patients, may allow doctors to share savings when they spend less resources, including ordering fewer tests.

Finally, the penalties for not ordering tests need to be better balanced. That means reform to curb the still very real defensive-medicine issue. One proposal is to cap noneconomic damages and eliminate lottery-style payouts, which serve as enticement for potentially injured patients and their lawyers to sue. Some industry experts suggest offering additional protections to high-risk specialists like ER doctors who are required by federal law to provide medical care to everyone, such as raising the standard for malpractice to gross negligence. Others have suggested medical tribunals, in which independent panels would hear claims and judge whether they have merit.

But real reform is unlikely to happen unless doctors' groups, supported by patients' groups interested in better medical care, band together with a common voice. Until then, the next time your doctor wants to order a test, ask why. The odds are that it will be the right decision, but just by asking you may be able to steer clear of a test or two and the potential downsides of overtesting.

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