ROOTING OUT DIAGNOSTIC ERROR

In the wake of a new Institute of Medicine report on diagnostic errors in health care, four prominent experts discuss how to bolster patient safety.

By Lauren Phillips

According to the Institute of Medicine (IOM) report *Improving Diagnosis in Health Care*, released in September, most people are likely to experience at least one diagnostic error in their lifetime—sometimes with devastating consequences. Diagnostic error, defined in the report as “the failure to (a) establish an accurate and timely explanation of the patient’s health problem or (b) communicate that explanation to the patient,” has widespread consequences:

- It is experienced by some 5 percent of U.S. adults who seek outpatient care.
- It accounts for 6 to 17 percent of hospital adverse events.
- It contributes to 10 percent of patient deaths.
- It is the leading type of paid medical malpractice claim.

Systemic causes of diagnostic error include inadequate collaboration and communication among clinicians, patients, and their families; a work system not designed to support the diagnostic process; limited feedback about diagnostic performance; and a culture that discourages transparency and disclosure of errors. Other
The IOM talks about cognitive biases being at the root of many diagnostic errors. What are these, and what can we do about them?

Graber: They’re the same kind of mistakes we all make in our everyday lives; it’s just that doctors are making them in a high-stakes environment. Our intuition does a great job, but every once in a while it will lead us astray. Three of the most common and troublesome ‘biases’ in medicine are framing and context biases (for example, a patient who complains of pain in the stomach area makes us tend to think the cause might be gastrointestinal, when really it’s something else entirely), premature closure (the tendency to be happy with the first plausible diagnosis that comes to mind, without considering other possibilities), and various confirmation biases (for example, we tend to favor evidence that’s consistent with our initial diagnosis and discount evidence that might suggest something else).

If every time we came up with a diagnosis, we stopped and asked ourselves what else it could be, this would tend to counteract all three of these bias tendencies. Constructing a differential diagnosis would accomplish the same thing, as would taking advantage of one of the several excellent web-based, differential-diagnosis programs that can provide suggestions in just a few seconds. When you’re really puzzled about a case, you’re going to automatically slow down, maybe do a little reading or get a consult; it’s when you’re making a very common diagnosis on the basis of very familiar symptoms that you need to double-check your thinking.

In the same way surgeons use checklists, physicians might benefit from using a checklist for diagnosis:

- Obtain your patient’s history yourself.
- Perform a focused, purposeful exam.
- Take a “diagnostic time-out” to ask yourself some questions. Was I comprehensive? Did I consider the inherent shortcomings of using my intuition? Was my judgment affected by bias? Do I need to make the diagnosis now or can it wait? What’s the worst-case scenario? What else could this be?
- Embark on your treatment plan, but ensure follow-up and feedback by making the patient an active partner in the diagnostic process.

Leadership spoke with four experts who are intimately involved in bringing this change about:

- Develop and deploy approaches to identify, learn from, and reduce diagnostic errors and near-misses in clinical practice
- Establish a work system and culture that support the diagnostic process and improvements in diagnostic performance
- Develop a reporting environment and medical liability system that facilitate improved diagnosis through learning from diagnostic error and near-misses
- Design a payment and care delivery environment that supports the diagnostic process
- Provide dedicated funding for research on the diagnostic process and diagnostic errors

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CAUSES ARE COGNITIVE, MEANING THE PHYSICIAN DOES NOT KNOW ABOUT A DISEASE (A RARE OCCURRENCE), FAILS TO GATHER ALL THE NECESSARY DATA ABOUT A PATIENT (MORE COMMON), OR ERRS IN PUTTING ALL THE PIECES TOGETHER (MOST COMMON).

THE IOM CONCLUDED THAT SOLVING THE PROBLEM REQUIRES A BROAD FOCUS ON IMPROVING DIAGNOSIS. TOWARD THAT END, THE INSTITUTE HAS ISSUED EIGHT RECOMMENDATIONS FOR HOSPITALS AND HEALTH SYSTEMS, PHYSICIANS, IT VENDORS, REGULATORY BODIES, EDUCATORS, AND PATIENTS:

- Facilitate more effective teamwork in the diagnostic process among healthcare professionals, patients, and their families
- Enhance healthcare professional education and training in the diagnostic process
- Ensure that health IT supports patients and healthcare professionals in the diagnostic process
- Develop and deploy approaches to identify, learn from, and reduce diagnostic errors and near-misses in clinical practice
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Singhal: We need to teach medical students and physicians about critical thinking, about how to overcome cognitive biases. For example, we know that premature closure is one of the most common causes of diagnostic error: Once a diagnosis is made, thinking stops, whether it’s an ED [emergency department] physician accepting the diagnosis of a patient’s primary care practitioner or an attending accepting the diagnosis of an ED physician. While you respect that opinion, you need to consider other possibilities, especially if you have new information.

I’m personally susceptible to authority bias—as a hospital-based general pediatrician, I work with a lot of subspecialists, and early on I might have disregarded internal misgivings if one of them said a patient had a particular condition. Now I’ve learned to take that recommendation into account, but also to listen to my own experience.

What can hospitals and health systems do to improve the diagnostic process?

Graber: The first thing is that healthcare organizations need to start finding diagnostic errors and studying them and thinking and talking about them. Right now the tools—both process and technological—that hospitals have to detect patient safety problems don’t pick up diagnostic errors.

There are some pilot programs. There’s one in Maine Medical Center, where one of the hospitalists told his colleagues, “I’m interested in diagnostic error; please tell me about the cases you think are candidates.” In six months, he got 36 reports of errors, none of which were detected by the usual safety-monitoring tools in operation at the time. All it took was a champion.

Start encouraging second opinions, and make it easier to get one—one way is to enlist and promote physician volunteers interested in providing second opinions. Spend a tiny bit of money and make those web-based differential-diagnosis programs available. Get proactive about feedback: Bring back autopsies and close the loop on diagnostic test results—send them to patients and monitor how many critical results are acted on within 30 days. Empower nurses to ensure tests get done, facilitate communication between patients and physicians, and monitor for new and resolving symptoms.

Singhal: Number one is raising awareness. One of the best ways to do this is with grand rounds, which have great reach—our invitations go out to about 400 people in and outside the hospital—and great impact, because they’re typically used to deliver cutting-edge information. This is a powerful way to deliver a message.

One interesting model is Harvard and its affiliated hospitals’ use of a malpractice company to educate their physicians in diagnostic error. Because at least initially a lot of the data about diagnostic errors came from malpractice claims, and usually if an attorney’s speaking, a physician is going to listen.

Schiff: Holding M&M [morbidity and mortality] conferences where clinicians follow up on missed or mistaken diagnoses can be quite successful, but organizations have to establish a culture of patient safety, where everyone is passionate about sharing and learning together from mistakes and physicians feel safe from punitive action.
Another thing we can do is close the feedback loop, perhaps by having nurses call patients two days after they are seen in the ED. We’ve been experimenting with an interactive voice response system in a variety of ways. This might mean the patient gets a call that says, “This is Brigham and Women’s Hospital following up on your visit with Dr. Schiff: Press 1 if you’re better and 2 if you’re not better.” If they press 2, they get to speak with a nurse. However we do it, the key, in addition to helping the patient, is to use such feedback to create learning systems, hardwiring follow-up both literally and figuratively.

**Kanter:** We have implemented two programs to improve diagnosis in ambulatory care that have proven to be very effective. One is our Sure Net program, which uses electronic clinical surveillance to identify potential lapses in the diagnostic process, such as by monitoring patients on medications, reevaluating high-dose acetaminophen prescriptions, and following up on abnormal prostate-specific antigen (PSA) smears. That last example is one of our biggest successes out of almost 40 Sure Net programs; we do about 50,000 screening PSA tests a year, and in a three-year period Sure Net identified 8,076 patients who looked like they needed some kind of follow-up; 3,833 got a urology appointment, 2,200 underwent biopsy, and we found 745 cancers. We can’t really translate that into lives saved, but clearly the program has made a difference. We used to have a couple of lawsuits a year over the failure to catch prostate cancer, and since we started it we’ve had none.

The other thing we did was establish a centralized reading center for diabetic retinopathy (DR) imaging, in which specially trained certified ophthalmological assistants and technicians read all the images from 13 medical centers under the supervision of a retinal specialist. Previously, we had significant unexplained variation among our medical centers in the rate of DR diagnosis, suggesting there was some misdiagnosis even though we could not identify exactly which patients might have been affected. As a result of our centralized reading center, the variation in the rate markedly decreased and our DR prevalence went from 10.1 percent of those tested in 2009, far below the national average, to 22.1 percent in 2012—meaning we caught more cases of DR, which is the leading cause of blindness among adults.

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**How can providers encourage patients to become partners in the diagnostic process?**

**Kanter:** One thing is giving them access to their own information. Our patients can see their lab results, their problem list, their medication records, etc., on our patient portal. Another tool on that portal is their online personal action plan, which lists what care elements they need and how to get those things done; for example, it will say you need a mammogram and here’s the phone number to call to schedule that. Patients actually get an email alert to log on and see what they’re missing.

**Singhal:** We also need to empower patients and their families to question the doctors. At Texas Children’s, we have a rapid response team that we can call if a
child is getting sicker; someone from the ICU [intensive care unit] will come up and provide a consult. A physician or nurse can call this number, but so can a parent.

One thing that’s really important to me as a pediatrician is whether the parents agree with my diagnosis. I look for non-verbal cues from parents, and then I might say, “Mrs. Smith, you’re the expert on your child, does this make sense to you?” I think the same thing would be especially useful with families of geriatric patients.

**Grabber:** Providers should take advantage of every opportunity to encourage patients to speak up, to ask questions: What else could this be? What should I expect? When and how should I follow up if symptoms persist or worsen? What resources can I use to learn more? Is this test worthwhile—can we wait? We should encourage them to keep good records of their symptoms and how they respond (or don’t) to treatment, their medications, and their test results.

**Schiff:** I think the most obvious way is access to data. If an EMR is searchable and properly organized and interoperable—which, unfortunately, most are not—you can quickly find biopsy reports and medication lists and records from other hospitals, all of which are important in making an accurate diagnosis. For example, if someone has a low platelet count, the EMR could remind me that the patient is on a drug that can lower platelets.

We certainly have a long way to go to make the EMR more efficient in terms of input efficiency and information display. For example, it would be useful if we could use our electronic notes to think out loud—What do I think is going on with this patient? What is the differential diagnosis? What am I unsure about?—and share that information with our colleagues. If your diagnostic assessment is buried in 10 or 20 pages of pasted-in data, it’s going to be hard to locate and not terribly useful.

Another aspect of this is transparency, so someone else can come along and see in my differential diagnosis that I haven’t considered something—or that I indicated I was uncertain. It would be great, for example, if every admitting note from the ED would say not just, “I think this person has a pulmonary embolism,” but also how certain that physician is in his or her diagnosis.

Whether current EMRs are helping or hindering our communication is still an open question. It may be that the most potent source of clinical decision support that EMRs now provide is streamlined access to information—for example, electronic textbooks such as Up-to-Date or Dynamed. It turns out that about half the time, doctors end patient encounters with unanswered questions—What are the causes of shortness of breath and blood in the urine? Can X actually cause Y?—they would like to follow up on but often don’t, because they simply don’t have the time.
What other technological tools could play a part in improving diagnosis?

Schiff: Taking this deployment of technology a step further, one could imagine ubiquitous real-time telemedicine, using the camera on our computer: I see an unusual lesion on somebody’s leg, and I hit a button and the dermatologist is there to weigh in.

I’m a big believer in voice-recognition technology. The accuracy has gotten remarkably higher in recent years, and it’s likely to play a big role in recording clinical history and assessments. This will make it easier for us to maintain eye contact with patients rather than having to look at the screen, which is helpful if you’re trying to engage them in coproducing a diagnosis.

One project we’ve been working on is including the indication, the why, in drug prescriptions, so we can link all the medications a person is taking to each diagnosis and make mistakes stand out. We’re trying to use this as a safety check and a patient education vehicle; it could also help inform clinicians why somebody is taking a particular medicine and be a cross-check on diagnosis to make sure the doctor and patient are on the same page.

Are you optimistic that the healthcare system can reduce the prevalence of diagnostic errors?

Graber: The first step is for healthcare leaders and professionals to accept that we have a problem with diagnosis. There’s been an assumption that we’re doing OK here, and there is a good basis for that assumption: It is a testament to the quality of our physicians and healthcare organizations that the correct diagnosis is reached around 90 percent of the time, because there are over 10,000 diseases and uncertainty is a constant at every step of the diagnostic process. But given the harm that we know ensues from diagnostic error, we really need to do better, to get to 92 percent, then 95 percent, as quickly as we can. I think that’s very doable—so many of the problems we’ve identified are preventable.

Schiff: I’m optimistic, with qualifications. We’re moving toward being able to use the EMR to get real-time support, reminders, help, and communication, but at the same time we’re also moving in the opposite direction with information overload and inefficient work flows. The EMR was supposed to make charting more efficient, yet to date it’s had quite the opposite effect. These things have seemingly not been priorities for the EMR vendors. But the transformative potential is there, and we’ve outlined more than a dozen ways we need to challenge the EMR and electronic documentation to live up to that potential. +

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