# How labs are taming test utilization

## Anne Paxton

June 2013—It might be a legacy of the economic downturn. Perhaps it is the prospect of increased capitation under health care reform. Or it could be the stunning price tags of some new tests on the clinical laboratory test menu. Whatever the cause, health systems across the country are increasingly moving beyond education and retrospective review to more specific, targeted, prospective controls on test utilization.

Seattle Children's has put genetic and other tests under a utilization management plan, led by, among others, Dr. Michael Astion and (from left) genetic counselor Jessie Conta, specialty labs manager Monica Wellner, and pathologist Bonnie Cole, MD. [Photo: Mike Siegel]

One of the most dramatic factors driving the trend is the number of new proprietary and genetic tests with four-figure prices. The $60 to $70 billion cost of clinical and anatomic pathology laboratory tests—which makes up four percent of the total U.S. health care tab—is on pace to double in three or four years. And ballooning molecular and genetic testing outlays are a major reason.

Partly as a result, traditionally modest laboratory costs are collectively starting to form a flashing amber light on the health care system dashboard, drawing the same kind of attention to test ordering that radiologists have long known in diagnostic imaging. "When a test costs $200, it's a different scenario than when a test costs $5,000," says Curtis A. Hanson, MD, professor of laboratory medicine and pathology at Mayo Clinic, Rochester, Minn.

At Mayo, for example, pressure from above and below recently made test utilization management a priority, Dr. Hanson says. "In hematopathology, starting three or four years ago, we were seeing a lot of requests for testing from clinicians that just didn't make sense. It reflected both a gap in knowledge and a problem with our processes that didn't encourage the right kind of testing."

Then, about two years ago, Mayo as a whole started grappling with finding that sweet spot of controlling expenses and providing quality care, he says, and asking how it could use all its resources most effectively. “Mayo started questioning whether physicians were ordering the right tests, and were we really getting the right clinical return from our laboratory testing dollars.” Test utilization became part of a general program of “practice optimization.”

His Department of Laboratory Medicine and Pathology chose to pursue a four-pronged approach to test utilization. “One is developing a test formulary. The second is reducing unnecessary testing in hospital patients. Third, implementing algorithm and guideline testing across the practice, whether that be low-volume, high-cost tests that can be honed by pathologists or genetic counselors, or algorithms for cascade testing that a clinician may order on a higher scale. And finally, reducing blood product utilization, obviously a high-cost area for all kinds of practices.”

Mayo shies from using the term “formulary,” but is now forming a committee to categorize tests according to whether they need review, Dr. Hanson says. Algorithm or guideline testing, however, has already had a measurable impact on utilization in hematopathology, where the emphasis has been on chromosome analysis, FISH testing, and a variety of molecular testing. (“Lab teams up to curb unneeded testing,” CAP TODAY, December 2012.)

Make it hard to order things you don’t want and easy to order what you do want, says Dr. Astion (rear), here with part of the Seattle Children’s pediatric lab utilization guidance service team (from left): Jessie Conta; Dr. Cole; Darci Sternen, genetic counselor; Monica Wellner; and Rhona Jack, PhD, division chief of clinical chemistry and technical director, biochemical genetics.

“We’re finding the algorithms are helping, most definitely.” Having pathologists who are willing and able to work with their clinical colleagues in establishing the algorithm and guideline approaches has been an important feature of Mayo’s test utilization program, he adds.

But there is still an art to medicine, Dr. Hanson cautions, and when one of his clinical colleagues at Mayo wants a test, in certain situations the laboratory will still agree to it even if it’s thought to be unnecessary. “I think standardization attempts have typically failed when people follow algorithms and guidelines like standard operating procedures that must be followed every single time. Standardization must be considered all the time, but not necessarily used all the time. In medicine, you really need to think about the usual patient versus the special patient. For the most part, the usual or routine patient accounts for 80 percent of what we do. Physicians tend to remember the 20 percent because that’s where 80 percent of their effort goes. But standardization needs to focus on the 80 percent—the usual.”

“It’s easy to point fingers at clinicians and say why are you ordering all this stuff?” But it’s impossible for clinicians to know all the performance and clinical characteristics of all the tests they are going to order, Dr. Hanson notes.

“When clinicians see a patient, they have a differential list of possible diagnoses in their head and they think diagnosis A is the most likely, but they feel compelled to do the testing to rule out diseases B, C, and D in this process.”

“They may have to draw blood at that point in time because it may be the only time they have the opportunity. They can’t go back once they start treating or if the patient doesn’t come back to the office, so if they don’t order all the testing then, they may have missed their chance.” Clinicians may have no choice but to order excess testing, if the lab doesn’t have a process in place that allows sequential testing. So laboratories are part of the “problem”—and the solution.

Dr. Hanson

There is another important benefit to test utilization management, in Dr. Hanson’s view. “Our genetic and molecular tests are growing rapidly and we need to keep our hands around that kind of expense. But that overall cost is still a small percent of the total. What I’ve seen by doing this utilization management in the lab is that it helps lead the change of culture across the entire practice of how you can practice more effective and efficient medicine.”

As the health care system gets more into value-based payment, he adds, “If we can’t show value for what we do, then labs will just get further commoditized. And we’ll be the last person around the table to get reimbursed. When you start pushing habits of effectively choosing the right test for patients in institutions, it begins to raise more global questions as far as utilization of other health care resources. And that’s how we can provide leadership within our practices.”

Based on research at his institution, Seattle Children’s Hospital, Michael Astion, MD, PhD, says utilization is a central problem in laboratory medicine. “In practice, you come to realize that the biggest errors in laboratory medicine that harm patients are doctors ordering the wrong tests, doctors misinterpreting laboratory results, and doctors failing to retrieve lab tests they’ve ordered,” says Dr. Astion, division chief of laboratory medicine at Seattle Children’s and professor of laboratory medicine at the University of Washington.

In research funded by the insurance industry, Seattle Children’s has looked at databases of millions of people who have had lab tests. “We’ve been able to analyze what tests they’ve had, how frequently, the medical necessity codes attached. And there are certain things you can see very easily,” he says. There are seven domains of abuse—some easy to detect, others not so easy.

For example, some clinicians order IgG allergy testing, a test with no evidence base to justify it but with CPT codes listed for it and some insurers paying for it. “That’s the low hanging fruit, where there is complete waste.” Other tests may be ordered flatly against guidelines, such as a PSA test for 90-year-olds on a well-patient screen, or an ANA test on 2.5 percent of patients in a database, even though lupus and related systemic rheumatic diseases occur in maybe five people in a thousand.

“So there is a lot of testing for low-prevalence disease,” Dr. Astion says. In part, patients themselves drive this over-testing because they Google their symptoms and many different diseases, both common and uncommon, come up. “That’s why thyroid testing is so overdone now. It’s one of the most popular tests in America because every conceivable symptom is related to thyroid.”

Fee-for-service medical labs still have tremendous incentives to promote over-testing in ambulatory patients because more testing equals more money, and many physicians simply think more is better. “Some [labs] try to

offer these gigantic panels as part of the special services they provide. For example, physicians are supposed to screen for cardiovascular disease risk, right? But some get talked into ordering much larger panels, 10 times the price of a standard lipid panel, and the labs make it part of their marketing strategy that they do much more comprehensive testing."

Similarly, instead of a focused workup after taking a detailed exposure history of six, 10, or 12 allergens, a doctor may order 25 to 100 allergens—most of which will be meaningless and some of which will produce false-positives.

Because of reimbursement through DRGs, "we've had a big motivation to decrease testing in the inpatient setting for a long time," Dr. Astion notes. Most places have eliminated the use of CK-MB for myocardial infarction except in special cases, for example, and use troponin instead. But various techniques are available for managing utilization apart from just taking a test off the menu.

"You can make something hard to order, say, by requiring three or four button clicks for CK-MB while troponin pops right up. You can just not allow people to order a test, or you can put it under management and require active review by a pathologist or specialist. For example, you can restrict the privileges of primary care practitioners so they can't order special very expensive genetic tests; only a geneticist would be allowed to order them."

Utilization "report cards" can also be useful, Dr. Astion says. "You can give feedback to physicians about their orders relative to their peers and relative to guidelines. That's very effective. And with electronic reminders on the CPOE [computerized physician order entry], when you order certain things you might get a message saying, 'That's an unusual order. Here's what is recommended.'"

The test-ordering system can include decision support options, which the physician can click to receive an ICU template, or care pathway, for a condition or disease. "In our system we call them 'power plans,' where you click on a few buttons and the template includes all the orders commonly needed. Then you can see how if it's not on that plan, it's not likely to get ordered."

Generally, Dr. Astion says, "you make it hard to order things you don't want, and easy to order things you do want. You make it easy to turn off standing orders on patients and hard to turn them on, because they're rarely useful. You put in detection systems to detect duplicate orders."

Seattle Children's program may be best known for putting genetic tests under a utilization management plan, he says. "Any genetic test above $1,000 has to be reviewed and approved, and we have a process for that. It's screened by a genetic counselor, an employee of the laboratory, for medical necessity, and that counselor works with the clinicians to move the order forward or modify it, usually in a downward direction. We find 25 percent of the time under this system, either the doctor cancels or modifies it downward."

The system was developed because of patient complaints about their out-of-pocket expenses for genetic tests, Dr. Astion adds. "In the old days, when tests were less expensive and insurance coverage was better, you just ordered tests and patients usually did not speak up about the costs. Now, the physician may say, 'I don't think this test is going to change the child's diagnosis or treatment but it may give you an answer on exactly the genetic problem your kid has,' and the parent can make a more informed decision. If, because of limited insurance coverage, it's going to cost $1,000 out-of-pocket, do they really want that test?"

Evidence-based medicine has steadily become a much more routine part of practice, Dr. Astion says. "There is a change happening. With standard clinical care pathways, when a patient comes in with a known syndrome or relatively uncomplicated cases of most common problems—for example, a patient admitted for diabetic ketoacidosis—they're put on a care pathway that everybody agrees to. They get certain tests, certain imaging, certain medication protocols or admission to the CICU, whatever it is, but all doctors have to follow that care pathway, and if they're going off it, there has to be good reason for it."

Paradoxically, a remarkable outcome of doing standard work is that you gather less data, he says. "Essentially there have never been more lab tests available, for example, and there have never been fewer recommended for

screening. Twenty-five years ago, you were going to a doctor and they would do a big chemistry panel for sure, but not now. We used to image the majority of patients with back pain and now we image very few. It's the quality of information that the clinical standard work makes you focus on. "

The incentives to do utilization management are, if anything, even stronger with send-out tests, Dr. Astion says. "Even though we pass the charge through to patients and mark it up, we often do not get back what we've had to pay. For example, I have to pay one diagnostics company $2,000 on average and I might recover $1,300, because they might have a patent and my insurance company won't pay that. In the case of Children's, half of our patients are on Medicaid, so I'm going to get somewhere between zero and $50. So we just don't recover our costs."

Seattle Children's focuses on the more expensive send-out tests, which tend to be rare tests. "And because they're rare, physicians make more mistakes with them because they're not ordering them every day. In addition, they are less likely to be retrieved; they take a long time to come back so you forget about them in your list of things you think the patient has."

Preventing repetition of genetic tests is another productive measure, Dr. Astion says. Even if a genetic test was done seven years ago, it usually shouldn't be repeated, because the result won't change. But it's difficult for most doctors to look back that far in a detailed medical record. Now, "we're taking a deeper dive in the EMR," he says. "It takes time but it's worth it. On average, we save $437 per requisition under utilization management. Even though you're canceling 11 percent and modifying 14 percent, the one you cancel might be a $3,000 test, so that pays for the 75 percent that go through."

Clinicians need to understand that the laboratory has gotten a pass from insurance companies because it's not as big a driver of health care costs, Dr. Astion believes. "But once you have a $1,000 test, lab tests become expensive items, like radiology scans which have been under utilization review a long time. Insurance companies start to take notice and so does the hospital. And that's what is happening and the reason why people are talking about lab utilization."

The Seattle Children's Hospital program has been rolled out nationally and picked up as a toolkit by other children's hospitals, under the name "Pediatric Laboratory Utilization Guidance Service," Dr. Astion says, noting that more information can be found at www.schplugs.org. "It's basically to help children's hospitals or the pediatric component of any health system order tests better on kids."

Focused attention to utilization will be a key component of the $5 million that the clinical laboratory at Intermountain Healthcare intends to save over the next five years, as part of an ambitious cost-cutting effort across the health system, says Stephen Mikkelsen, MS, MT(ASCP), laboratory services operations director of the Salt Lake City health system. But Intermountain is not opting for red flags or straight-up ordering curbs. Rather, Mikkelsen describes a low-key, persuasion-based model for getting physicians to see the merits of managing utilization.

Mikkelsen works with every clinical program at Intermountain to scrutinize test use, and he finds plenty of room for improvement. The current recommendations for prenatal testing of the American College of Obstetricians and Gynecologists, for example, "are quite a lot more limited than what doctors are ordering,"

Mikkelsen says. "We looked across the system and the ordering patterns were all over the map, so I met with the clinical program director and asked why."

"We're starting to have more and more conversations with doctors about their panels, versus just being this place in the basement that sends back results."

**Mikkelsen**

The laboratory is not a gatekeeper, Mikkelsen stresses. “There’s no way the laboratory can tell doctors what they may or may not order. If you just come up and say, ‘This is what ACOG recommends,’ that doesn’t work. But what we can do, with evidence-based medicine, is have them look at the tests ordered and see how they have affected their patients’ outcomes post-delivery. You share it. You say, ‘This is what we’re seeing, here’s what your colleagues are doing.’ If you can show the tests were ordered but had no effect on outcomes, you can help doctors draw the conclusions you want with just the data.”

The laboratory achieved even wider impact by meeting with the cardiology department about the older, nonspecific cardiac markers. “You can pull patient charts for the last several years and review the data and see the old markers aren’t clinically relevant,” he says, adding that the cardiology department has agreed to no longer order CK-MB and CK. Mikkelsen estimates the system will save $1.2 million this year by eliminating just those two tests. Using similar retrospective peer reviews, providing surgeons with comparative data showing how much blood they were ordering versus their colleagues’ orders, last year Intermountain saved $460,000 in blood products.

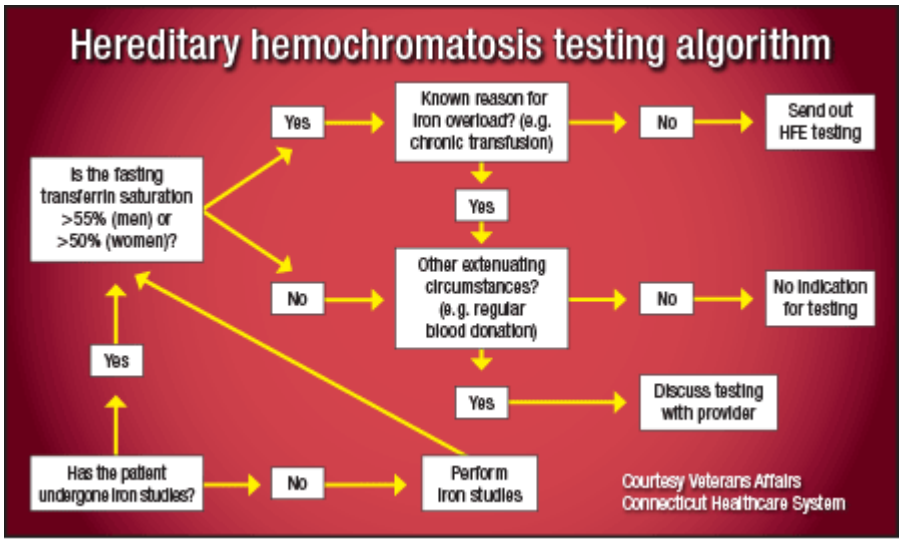
Intermountain has already made a name for itself in cost-effectiveness, with its quality improvement program cited in the Institute of Medicine’s 2012 report “Best Care at Lower Cost,” Mikkelsen says, and Brent James, MD, executive director of Intermountain’s Institute for Health Care Delivery Research, has helped hospitals nationwide shift their focus to outcomes. “He has a course that people attend from all over the country, to learn how to look at their existing processes and how to improve them using evidence-based medicine.”

The laboratory, Mikkelsen believes, can bring a fresh set of eyes to test ordering and help clinicians make a course correction. Sometimes a few simple questions are enough for the laboratory to have a dramatic impact. After a patient walked into Mikkelsen’s corporate office with a concern about how to pay for the 92 tests her doctor had ordered for her, Mikkelsen asked her permission to get the doctor on the phone. He found out the physician wasn’t sure what he was looking for and ordered some of everything to see if a result would be abnormal.

“So we walked through what he was trying to rule in and rule out, and we got the test order down to just a few tests.” The next day the doctor called back. “He said, ‘That was a really valuable conversation to have. There are a lot of these tests and I’m not sure what we should be ordering. It never dawned on me that we could call you or somebody in the lab and have this conversation.’”

For its first test of whether prospective actions  to intervene at the time of ordering could reduce overuse of tests, the Veterans Affairs Connecticut Healthcare System decided to focus on the 18,000 to 20,000 tests a year it sends out to reference laboratories, says Christopher A. Tormey, MD, assistant professor of laboratory medicine, Yale University School of Medicine, the major academic affiliate of VA Connecticut.

The VA took a two-tiered approach to send-outs: prospective auditing and a prospective laboratory formulary. “In the last two or three years, we’ve been experimenting with taking two or three tests out of the test menu, and working with our specialized clinicians in oncology and other services to drill down and make sure there’s a second set of eyes looking at the test request before it goes out the door,” Dr. Tormey says.




For some tests, the VA pathology and laboratory medicine service obtained administrative approval for test cancellation, typically based on evidence that test results would have no impact on patients. The most common policy-based cancellation was methylmalonic acid, used to evaluate patients with questionable vitamin B12 deficiency, but only useful for “gray area” cases, not for most patients.

Other tests were placed on the formulary and made orderable only by a special process. For example, “Our No. 1 test that we were sending out was vitamin D screening, and we were getting clinicians who were unsure which test to order and were ordering both options on the test menu: vit D 1,25 OH in addition to vit D 25 OH. So we essentially made vit D 1,25 OH a test that can be ordered only in consultation with laboratory medicine or endocrinology, and that saved a lot of unnecessary testing.” Send-outs of vit D 1,25 OH have dropped to fewer than 20 per year, with no complaints from primary care physicians, Dr. Tormey notes.

An algorithm-driven review helped stem another high-volume send-out: hereditary hemochromatosis genetic testing, generally a $209 test. “Many clinicians will test for mutations in HFE in a ‘knee jerk’ fashion,” Dr. Tormey says, “often based on slightly abnormal iron studies, increased hemoglobin/hematocrit, or even mildly abnormal liver enzyme tests.” The laboratory used a literature review to develop an algorithm (see page 80) to first test for transferrin saturation, to see whether the patient meets criteria for having an iron overload. “That was another place where we were able to streamline this broad-based testing that gets done for patients with questionable or unknown diagnoses.”

Clinician response has been positive, Dr. Tormey says. “We might call and say we were reading the note and didn’t quite understand why they were ordering test X. And nine-tenths of the time we end up getting a very reasonable person on the phone saying, ‘I didn’t realize this test was ordered,’ or ‘We have more information and totally agree the test is no longer necessary.’ It’s a minority of the time where somebody is upset or flatly refuses to cancel the test or consider an alternative.”

The overall cost savings of the prospective audits and formulary programs have been impressive. The system saved an estimated $90,000 to $100,000 per year from reviews and algorithms. That does not include the savings from tests the formularies prevented, and from prevention of “chart viruses” secondary to inappropriate tests (where bad data or a mistaken diagnosis attaches to a patient’s EMR), which are more difficult to estimate.

VA Connecticut plans to expand its test utilization controls on three fronts: reducing duplicate orders for send-out and in-house testing, expanding algorithmic approaches to lower-volume but higher-cost tests, and expanding the lab subspecialty formulary model for other high-priced tests. “One of the beauties of the VA system from a test utilization standpoint is that we have had an outstanding electronic medical record in place since the mid 1990s and it puts a great deal of patient data at our fingertips,” Dr. Tormey says.

“If we can figure out that a genetic test was done on a patient eight or nine years ago, then we can cancel an order

of that same test. Right now, our system is not going to tell an ordering provider that such a test has already been done unless they specifically query for the lab result, so we would like to develop a clinician feedback system to notify them, first that a test has been done, and second, ask whether they want to do it again."

The benefits would extend not only to molecular tests but also to tests like CBCs, Dr. Tormey says. "How many CBCs are really necessary over the course of one admission? On a single patient-by-patient basis it probably doesn't make a big difference, but if you can cut your overall CBCs by a third by knocking out unnecessary duplicate testing, there can be a real cost savings."

Laboratories that want to expand their test utilization controls don't need the resources of the VA, however. Reference labs such as ARUP in Utah as well as the Mayo Clinic have developed algorithms that are open to the general public and are ready-made starter solutions for laboratories needing to manage test use. "A middle-sized nonacademic hospital could very easily start with these algorithms on the ARUP or Mayo Web sites, and slowly but surely start to target some of these tests," Dr. Tormey says.

Control of costs is only one of the payoffs, he says. "The benefit of utilization review is getting better results for patients by preventing send-outs that are probably not necessary and, in some cases, provide information harmful to patient care because of bad data. It's great that we're able to control costs or reduce phlebotomies and lower the bottom line of our send-outs. But ultimately, preventing unnecessary or incorrectly ordered tests that can lead to problematic treatments for patients is the most important aspect." The monetary benefits are certainly important, he says. "But they're of secondary importance to improving clinical care for our patients."

*Anne Paxton is a writer in Seattle.*