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Vision quest—fresh look at AP automation

Karen Titus

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pictured something else: dispensing with the old MO of overnight processing and early morning embedding/cutting and moving toward continuous flow processing. "We run that thing 24 hours a day."

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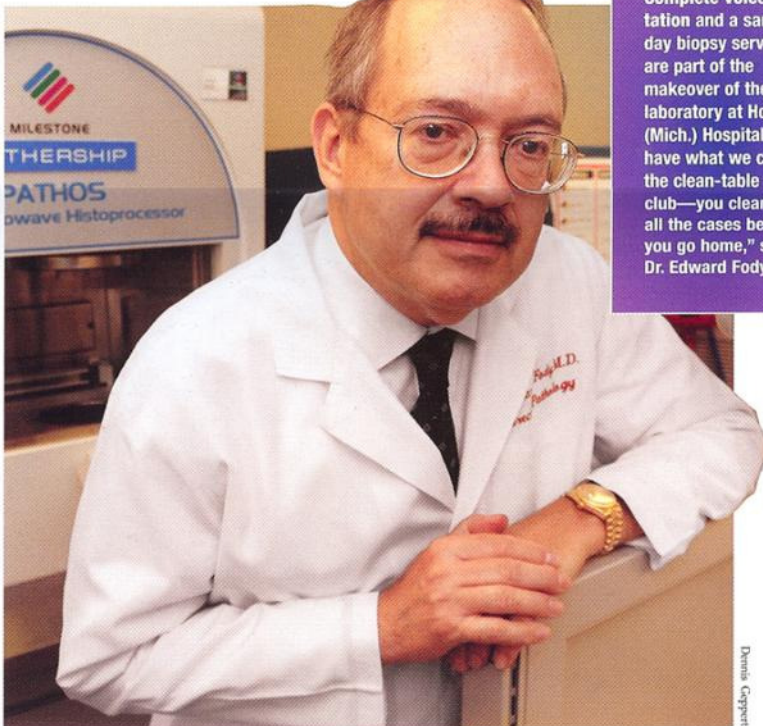
Things heat up for personalized testing

Anne Paxton

There's no question that targeting therapies based on biomarker tests is becoming common practice. Mara G. Aspinall, past president of Genzyme Genetics, Westborough, Mass., calls this new practice of personalized medicine a tremendous opportunity for pathologists. Speaking at the CAP Futurescape conference in Chicago in June, Aspinall said she prefers the term "specific medicine" because it underscores the critical role of precise diagnosis in treating patients effectively.

In hematologic malignancies, for example, "five-year survival has gone from zero to 70 percent, because we have the ability to do not just morphology but fundamental molecular work to get an expanded characteri-

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Dennis Karpent

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Wins, worries on reimbursement battlefields

Karen Lusky

All may be fair in love and war, but health care providers do seem to end up with the short end of the payment stick often enough in the tug-of-war with Medicare and other payers over reimbursement. Lately, however, labs and pathologists have scored some victories in the payment arena. But major challenges remain, in-

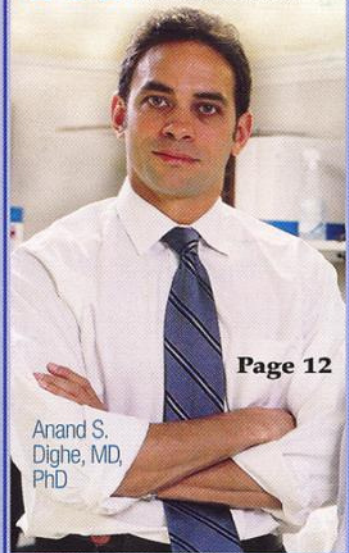
cluding ones that create an uneven playing field and threaten patients' access to innovations in testing. The good news is that there's no shortage of ideas and efforts in the lab community to address them.

The latest fight over a tight budget involved the Medicare Improvements for Patients and Providers Act of 2008 (HR 6331), which Congress passed in mid-July by overriding a presidential veto. President Bush reportedly objected to the measure because it tapped Medicare Advantage funding to subsidize physician payment. The legislation reversed a 10.6 percent physician fee cut set to go into effect on July 1, and repealed Part B competitive bidding for labs.

Importantly, the Medicare package repeals not only CMS' legislative directive to do a lab competitive bidding demonstration but also the agency's authority to use the bids

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Making the right calls on critical values and critical tests.



Anand S. Dighe, MD, PhD

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Advancing Excellence





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Longstanding practices are born and die hard for the same good reason: They’re usually created by smart people tackling tough problems with what they have on hand. In that sense, nothing has changed in anatomic pathology laboratories, which remain filled with smart people tackling tough problems. But now tools such as voice recognition, digital dictation, and two-dimensional bar codes are granting them new ways to work.

The biggest change, however, has been less tactual. It’s a matter of perception, or, as Dr. Patterson puts it, “learning to see.”

That has meant looking at old processes in new ways and questioning the wisdom of, well, wisdom. It’s meant rooting around for problems and inefficiencies where none are thought to exist, and it’s meant purchasing equipment to support practices that are no more than wishful thinking right now. Much of this is counterintuitive. Perhaps the most vivid illustration of this comes from Holland Hospital, where, as part of a sweeping makeover, the AP laboratory moved from its second-floor location into that traditional fiefdom of pathology, the basement. Though that meant giving up its prized windows, the lab now enjoys a view that’s more far-reaching. Literally stepping down has been a big step up.

At Holland, the lab required panoptic changes; it was, says Dr. Fody, akin to starting with a blank sheet of paper. Shortcomings included the lab setting itself, in a former surgical ward with stone walls that clogged workflow and meant poor temperature control and ventilation; a 15-year-old computer system, with capabilities far below those offered by a modern, Windows-based system; and that single tissue processor, which, though good, was just a single tissue processor.

“We decided we didn’t want to go from being mediocre to good; we wanted to go from mediocre to best,” says Dr. Fody, who started at Holland in 2004 and was brought on to oversee the changes. Hospital administrators, who had been fielding complaints from clinicians about the outdated lab setup and slow turnaround times, backed him strongly.

Dr. Fody’s first step was to look at tissue processing, since fixing this problem would happen more quickly than purchasing a new computer system or developing a new facility. The two criteria for purchasing a new instrument were quality and speed. He chose Milestone’s Pathos, which runs about twice as fast as the old processor.

The old computer system did not allow good assessment of turnaround times—one of its many drawbacks—but Dr. Fody says that even without solid comparative data, the lab’s turnaround times are clearly faster. This includes offering same-day biopsy service: in by noon, hard copy of the pathology report in the physician’s hands by around 4 PM.

Upgrading the computer system came next. At the time, the laboratory was entirely dependent on the hospital transcription service for typing its reports. Cases handled by the lab in the afternoon rarely were ready for clinicians that same day; rather, they would be typed overnight and available in the morning. That meant making a lot of time-consuming afternoon phone calls to physicians, who nonetheless preferred hard copies of the pathology reports. “It’s pretty tough to plan therapy based on a verbal report,” says Dr. Fody.

To find a new system, Dr. Fody and his colleagues used CAP TODAY’s annual review of anatomic pathology computer systems as their jumping-off place. A committee of pathologists, histotechnologists, laboratory managers, and information technology experts from the hospital were given copies of the review and asked to label the features listed for each system as essential, desirable, or unimportant. Dr. Fody also limited the search to well-established systems with plenty of site installations.

As the group worked through these and additional criteria, the initial pool of candidates shrunk. Some eight to 10 vendors were sent RFIs; from there, four were invited to make presentations. After that first round, three of the vendors were invited back. Soon after, Dr. Fody and his colleagues were left with “a very hard choice between two.” Ultimately they chose PowerPath, swayed in part by its bar-coding capabilities.

Previously, the routine in the lab followed the well-worn path of pathologist assistants grossing the cases and manually writing numbers on their cassettes. The histotechnologists in turn manually wrote numbers on the slides. “There was always smudging and potential for misidentification,” Dr. Fody says. Bar coding has ended those worries.

The laboratory also uses an Internet reporting module, which allows physicians to check results for the specimens they submit. Some 60 to 70 percent of the lab’s clients use the module, and Dr. Fody predicts all clinicians will ultimately adopt it. The search took two years; the system went live in March 2007. The system, in

tandem with the new tissue processor, has sped things up tremendously, in part because it has eliminated waits for outside transcription services. “We’re 100 percent voice dictation,” Dr. Fody says. That has forced the three pathologists to pick up their pace, since they’re no longer dependent on transcriptionists to maintain workflow. “We have what we call the clean-table club—you clean out all the cases before you go home. Because everything can at least be looked at, and the vast majority can be signed out the same day,” Dr. Fody says. Clinicians have embraced the reformulated lab. “Same-day biopsy service is very popular,” Dr. Fody says. “Clinicians love it.”

The AP laboratory at Yuma has followed a similar path. Like Holland, Yuma is a PowerPath user, and has been for a number of years. Last fall it installed version 9.1, which enabled the lab to put bar-code labels on slides. The hospital also threw its support behind a hospitalwide voice-recognition program from Nuance Dictaphone, driven by Dragon NaturallySpeaking, which will eventually allow physicians to dictate notes directly into electronic medical records. The two elements allowed Yuma to put together a thoroughly modern (and thoroughly hyphenated) approach to AP work: bar-code-driven, voice-enabled pathology workflow.

Early on, it became clear to Dr. Patterson that the system would require another element to link PowerPath to the Dragon program. Ellin, histology systems technologist, was skeptical the hospital would put up the money. Dr. Patterson’s answer was to announce to the IT department that pathology would volunteer to be the first group to tackle voice recognition—if the hospital was willing to retain a value-added reseller. It was, and the lab was able to integrate the pieces using a Voicebrook solution. (Holland uses Voicebrook as well.)

What might have been good enough was given another boost when the department’s head, Victor Alvarez, MD, came back from the Lab InfoTech Summit (sponsored by the Pathology Education Consortium, www.labinfotech.org) in Las Vegas with his head full of ideas for Lean production. How stirred up was he? “He was practically on fire to do Lean,” recalls Dr. Patterson.

Dr. Patterson had previous experience with Lean and Six Sigma and agreed it would be a good idea. Dr. Alvarez, who had plenty of pull at Yuma thanks to his 35 years at the institution, then did a smart thing: He immediately got high-level executive support for a Lean pilot project, says Dr. Patterson. Adding Lean to the bar-code and voice-recognition systems thus “put three plates spinning in the air,” jokes Dr. Patterson.

Somehow it’s all worked, though not everyone jumped in with abandon. (The histology/laboratory staff consists of one supervisor, one PA/histotechnologist, two histotechnologists, one histotechnologist aide, and three transcriptionists, in addition to four pathologists.) The histology supervisor, says Dr. Patterson, was “not of the faith yet” and calmly labeled Lean as “just another idea that will go away in time.” When Lean-inspired changes led the histology lab to process slides four times more quickly, she became a “believer.” He also refers to the coming together of bar coding, voice recognition, and Lean as “miraculous.” Despite the religious tinge to his words, there’s nothing ethereal about the results.

The voicerecognition system, with its reliance on templates—many of them based on CAP checklists—makes it possible for pathologists to dictate reports in as little as 30 seconds, Dr. Patterson says.

No apples-to-apples comparative data are yet available, but Dr. Patterson says TATs have improved markedly. Before the system took root, 95-plus percent of cases were turned around in 24 to 48 hours. Dr. Patterson says he now turns around some 70 percent of his cases in less than 24 hours; as others become more adept, he expects their TATs to improve as well.

In addition to speeding up the dictation process, the reports are now uniform. Nothing gets left out of reports—a not-uncommon problem previously—and the oncologists report high satisfaction. The reports' clarity "compels the appropriate action," says Dr. Patterson.

Bar coding has also improved workflow. Gone are the numerous clicks to open and search within cases. "You put the slide under the bar-code reader, just like at the supermarket when you're checking out groceries, and the case opens up exactly where you want it to be," says Dr. Patterson. "Then you dictate your report by voice recognition." Calling out commands—saying "press F8," for example—allows pathologists to navigate smoothly through the case. "You can go through 30 or 40 cases in nothing flat. My secret pleasure every day is signing out cases with my voice," says Dr. Patterson.

At Holland, the third spinning plate, if you will, went into motion when the laboratory moved into its new digs in the basement last October, nearly three years after Dr. Fody joined Holland. The laboratory was redesigned from the bare walls. The histology lab is now open, allowing everyone to see what his or her colleagues are doing, and the equipment is laid out to reflect how the histotechnologists do their work. "They don't have to keep retracing their steps," Dr. Fody explains. Gross exams are done in a separate room next to the histology area. The two PAs can work simultaneously, since the two grossing stations are back-to-back, rather than side-to-side, which allows the voice-recognition system to be used. That wouldn't have been possible in the old facility because it was simply too noisy in the gross room, says Dr. Fody.

The lab did what Dr. Fody calls an informal Lean to help with the configuration, and all the players had a say in designing the lab. The PAs basically designed the grossing room; the histotechnologists (there are three at Holland), the histology lab. "There's no wasted effort or space," says Dr. Fody.

Similar integration keeps things flowing smoothly at Yuma. "The whole thing is integrated from front to back," says Dr. Patterson, from registering the specimen through moving materials across the pathologist's desk.

At both hospitals, the transformations involved intensive bouts of navel-gazing. "We weren't interested in how other labs did it; we were interested in doing it according to our own needs," Dr. Fody says.

Dr. Patterson cautions against replicating his—or anyone's—setup. A lab would be better off understanding its own workflow and upgrading it, he says, rather than imposing a completely different way of doing things. Sounding like a yogi,

he advises: “Start with where you are. Not where you think you should be. Not where you wish you were. But where you actually are.”

Dr. Patterson clearly felt comfortable as the leadoff hitter at Yuma. Of the four pathologists, he uses the voice-recognition system most consistently. “You have to start somewhere,” he says. “I just jumped in.”

He’s also been the one to keep things rolling. “The thing with pilot projects is you want to get all the way through the workflow. And to do that, you need someone who’ll champion it,” says Dr. Patterson, who formerly was a product development manager at Beckman Instruments, where his team designed the CX7 clinical system. With voice recognition, that meant working through the bumps and bruises of the system, of which there were plenty. Even Ellin admits, “I used it for three weeks and I wanted to throw it out the door—and I’m a computer person. I hated it.” It meant persuading others to stick it out, too. After Dr. Alvarez became frustrated learning the new system and threw in the towel, “He and I had a heart-to-heart talk,” Dr. Patterson says, “I told him, ‘It doesn’t look good for the head of the department to decline to do this.’”

Ellin brought other skills to the table, notably his background as an engineer. Dissatisfied with the standard bar code, he knew to look for a different one—and where to find it. Rather than using a gun-like reader that requires users to point the device and pull on the trigger, Ellin tracked down readers that hang off the side of the microscopes, next to where the slide trays are kept. “I just pick up the slide and move it under the reader and wait for the beep,” says Dr. Patterson. Ellin also was the driving force behind the two-dimensional bar codes, which will make it possible for the laboratory to encode more information, such as programming steps, down the road. Ellin says vendors told him repeatedly that the machinery couldn’t do what he wanted it to do. But he kept pushing, and usually discovered, often to the surprise of the vendors themselves, that the equipment could indeed be tweaked to accommodate the lab’s requests.

It doesn’t take an engineer to push vendors, Ellin insists. Anyone can ask why and refuse to accept “no” for an answer. “Find out why they can’t do it. And at times, they’ll end up saying, ‘Well, maybe we can.’ They don’t see it from our eyes,” Ellin says. “They see it from the perspective of what they’ve been told their machinery can do.”

The heart of the transformation involved seeing things anew within the laboratory. Dr. Patterson credits Lean with helping him to see his own work habits differently. Now, he says, he no longer interrupts his workflow, which he constantly did in the past. “It makes you conscious of every step, and teaches you not to waste moves.” He likens it to watching an intern sew up a wound in the OR. “The intern has 20 moves to put the suture in, and if you watch the chief resident or staff surgeon do it, it’s three moves.” (One thinks of Rossini’s famous comment about Wagner’s operas, when he noted that Mr. Wagner has beautiful moments but bad quarters of an hour.) The equivalent in the lab is removing the countless ordinary actions that fill a day, such as clicking on a mouse.

He’s aware that not everyone shares his passion for Lean, which is rooted in Toyota’s production system, and he’s cautious about drawing too many analogies

to the automaker's successes. "People say, 'We're treating patients, not making cars,'" says Dr. Patterson, who's obviously heard this many times. His response is that medicine has two sides of the coin: one is the art of diagnosis, and the other the systematic treatment of the patient. As anyone who has toured a Toyota plant can attest, the innovation occurs on the production line, not on the road. "That's the part we want to steal for health care."

Toyota's system is rooted in incremental change, so it's somewhat ironic that Dr. Patterson says he wishes they'd pushed harder to change everything at once. The original plan was to move in steps, first incorporating digital dictation—replacing tape files with electronic files—and then tackling voice recognition. That was partly to ease people's fears about changing everything in one fell swoop and partly a response to a more simple reality: "Our old Dictaphones were breaking down," Dr. Patterson says.

As it turned out, he says, "You're far better off to jump all the way across with voice recognition."

Labs might as well burn their bridges while they're at it. "When you go to voice dictation, go 100 percent," Dr. Fody insists. "That's what we did. No backups. No using the old system. You use voice, or you don't work here. That's the only way to go, because people will initially be a little uncomfortable with it and want to stick with the old system and end up never converting. So when we converted to voice, we disconnected the transcription microphones. There was no manual transcription available." This peremptory play didn't appear to bother the laboratorians. "I think they were relieved," Dr. Fody says.

Despite his call to take the full plunge, Dr. Patterson cautions that within that sea change small strokes are still advisable. "You don't ask people to clear a six-foot bar if they've never done the high jump before."

That's a lesson Ellin says he had difficulty absorbing at first. In this, his engineer's background was a hindrance, rather than a help. Though his training allows him to spot inefficiencies in processes and systems, he failed to weigh the emotions of those running the processes, or the upstream and downstream effects of changing them. With humans in the mix, even the smoothest of systems can go wonky. He's since learned to see that transcription is part of the lab's workflow, which is one reason he and his colleagues are now trying to bring bar coding into the transcription area.

What about personal resistance to change? Here, too, matters may not always be what they first seem. Conventional wisdom, for example, holds that older physicians are resistant to innovation. Asking them to adopt new technology, according to this theory, is like asking theatergoers in Branson, Mo., to embrace a Martin McDonagh play. But Dr. Patterson notes that he and his fellow pathologists are all 60 or older: "We're card-carrying members of the old-farts club," he says. "From time to time I have to remind people that it is a myth that physicians will not adopt new technology or that it's difficult for them." His evidence: the speed with which physicians took to cell phones. "If you recall, it took about 500 nanoseconds to make that conversion."

Obviously, the changes wrought at Holland and Yuma involved slaying bigger beasts.

Perhaps a brief review is in order. Digital dictation records voice without using a tape cassette. The resulting audio file enters a “tank” or database and can then be transcribed by either a local transcriptionist/secretary or by some remote transcription service, explains Bruce A. Friedman, MD, president of the aforementioned Pathology Education Consortium and active emeritus professor of pathology, University of Michigan Medical School, Ann Arbor. The output is a typed digital file that can be integrated into the LIS. It’s easy to see why this technology is popular, says Dr. Friedman—pathologists don’t have to change their habits to use it.

Voice, or speech, recognition supersedes digital dictation. In this case, says Dr. Friedman, sophisticated software decodes the voice dictation and directly generates a digital text file. The accuracy hovers around 95 to 98 percent, often failing on patient surnames or other words not carefully enunciated. To clean up the first draft, the person dictating may have to make his or her own edits, a common practice in radiology, according to Dr. Friedman. (Referencing radiology is common among pathologists who champion digital dictation/voice recognition. A frequently voiced goal is to see their profession one day match radiology in terms of running a fully digital, filmless operation, though this desire is invariably followed by the command, “Don’t quote me!”) Despite these drawbacks, voice recognition should one day knock aside digital dictation, predicts Dr. Friedman, since it’s faster and cheaper and continues to improve.

The voice recognition industry sometimes uses the terms “front-end” and “backend” to distinguish between these two general methods, Dr. Patterson notes.

Front-end uses a speech recognition engine (such as Dragon NaturallySpeaking) on the pathologist’s workstation to translate spoken words into words on the computer screen. Since no voice file is produced or stored, says Dr. Patterson, there’s no need for transcriptionists to enter into the picture at that point, adding that transcriptionists will have a newly evolving role as QA/editors of the pathology report in the next step of the process. The back-end method is the equivalent of digital dictation.

At Yuma, says Dr. Patterson, “Our digital dictation concept doesn’t use or require a speech recognition engine and is more analogous to the early Dictaphone tapeless systems.” In Yuma’s fully implemented system, digital dictation will be used only for frozen sections, where the rapid work tempo can’t accommodate the loading and use of voice recognition. Here the concept is “step on the pedal and start talking,” he says—directly analogous to the tape-based dictating machine, minus the tapes. Pathologists not yet trained on voice recognition could also use it for gross and microscopic dictation, or if they work only infrequently or are onetime locums.

At Yuma, the voice recognition piece remains a work in progress. But Dr. Patterson hasn’t let the chuckholes along the way distract him from an even bigger vision. “Hands-off—you’re doing it all with voice,” he says. “And you’re doing multimodal correlations, all digitally, just with your voice and with a virtual microscope. That’s the biggest vision we can paint right now.”