New Digital Generation

in Anatomic Pathology
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Digital pathology is profoundly changing the field of anatomic pathology (AP). As early adopters of digital pathology, pathologists at Pacific Pathology Partners “are advancing diagnostics for patients locally, regionally and globally, and fundamentally changing the way we practice medicine,” says Gregory S. Henderson, M.D., Ph.D., president.

It is not unusual for the lead pathologist of this private AP lab, nestled in the Northwest corner of the United States, to digitally convene a room full of multidisciplinary specialists for a tumor board, assign IHC special stains to multiple cases, and review 10 international OB-GYN cases -- all from home before 8 a.m. Often Dr. Henderson reviews cases at 30,000 feet on a plane, or on the ferry as he travels to the office. “I can review cases wherever there is a laptop and a WIFI,” explains Dr. Henderson.

“I am passionate about the new digital generation. and I believe digital pathology is the innovation in anatomic pathology our profession needs to advance diagnostics for patients worldwide,” he says.

Note: The Food and Drug Administration (FDA) has not approved digital pathology for primary diagnosis in the U.S.

“Digital pathology allows us to work faster and smarter. It is a game-changer for recruitment and retention of tomorrow’s pathologists. And, it expands our reach beyond our backyards to patients and practices around the world.”

— Gregory S. Henderson, M.D., Ph.D., president
Pathologists use digital pathology to accelerate results

Pacific Pathology Partners is agnostic in its use of digital pathology; however, its pathologists have benefited from using the Virtuoso image and workflow management software by Ventana Medical Systems, Inc. (Ventana), to accelerate turnaround of diagnostic results – primarily for liver and breast cancers and pap smears. The lab leverages digital images for initial assignment of special IHC stains. “Early in the morning, before I make my hour-long journey to the lab, I review H&E cases that may require IHC stains. That means I can turnaround a case at least one to two hours earlier,” says Dr. Henderson.

According to Cara Cole, Dr. Henderson’s assistant, the lab frequently consults on complicated cases with pathologists 1,200 miles away.

“Just yesterday, Dr. Henderson asked me to send over a case to PathCentral, Inc. in Irvine, California. Within 20 seconds, a pathologist logged into the Virtuoso image and workflow management software to review the case.”

— Cara Cole

Cole also says the consulting pathologist reported that the instrument produced crisp, sharp digital images, and he found the user interface highly intuitive and easy to use. “When I came into the office in the morning, our lab techs already had his recommended IHCs underway.”

“Any time a support staffer can move a case along without pathologist intervention, that’s saving everyone time and money,” says Cole, and the digital pathology system offers walk-away automation that improves lab productivity and throughput. After conducting time studies on scanning cases into the Virtuoso software using the Leica and Aperio scanners, Cole concluded that, from an image management perspective, her preference by far is to use the Virtuoso image and workflow management software by Ventana [over the others] for tumor boards and internal and external consults.

“Image management in the Virtuoso software offers unprecedented reliability and image quality,”

— Gregory S. Henderson, M.D., Ph.D

Other pathologists who have used it concur, including one pathologist who recently visited Pacific Pathology Partners for a week to test digital pathology. After using the Virtuoso software to digitally consult on cases with pathologists at his Spokane Valley practice throughout the week, “…he loved it,” Cole reports.

“If it takes showing one pathologist at a time, that’s what I’ll do,” said Dr. Henderson, underscoring his desire to push the adoption curve for digital pathology.
Digital pathology creates a multidisciplinary approach to diagnostics

In the academic community, a multidisciplinary approach to tumor boards is common; however, in smaller communities – like Kitsap County, population 250,000 – it is much more difficult to convene and collaborate with independent physician practices. Pacific Pathology Partners serves as a reference laboratory for a 300-bed community hospital and numerous medical practices scattered across 566 square-mile service area. For a multidisciplinary tumor board to be possible, they need a way to virtually connect radiologists, surgeons, oncologists and pathologists who cannot travel the distance. “We laced together a virtual tumor board in Kitsap County that transformed care in our area,” says Dr. Henderson. Using online meeting software to communicate with those not present at Pacific Pathology Partners, Henderson and his team simply scan the cases before the tumor board and display the images from the Virtuoso digital pathology software.

“The tumor board is an incredible reward for me,” Dr. Henderson says. “Five years ago, it didn’t exist and now I have a multi-specialty group convening in my office in my digital space.”
Pathologists find themselves untethered from the desk

“Once digital pathology takes hold, more physicians will be enticed to go into pathology because digital pathology untethers us from the microscope and our desks...”

— Gregory S. Henderson, M.D., Ph.D

According to Dr. Henderson, digital pathology is moving pathology from a peripheral practice to what he calls a “primary care pathology practice.” He explains how digital pathology “binds people together and makes the process of diagnosing cancer much more visible to other physicians.” Today, it is common for pathologists to consult with patients and referring physicians – a practice that didn’t occur a decade ago.

As the practice of pathology changes, so do the prospects for the next generation of physicians choosing pathology as a career. He continues to say, “It gives upcoming generations more control and work/life balance, which enhances future recruitment and retention of pathologists.” For Dr. Henderson himself, it means immediate coverage of a much greater diagnostic area.

Dr. Henderson believes digital pathology will positively impact the growth shortage of anatomic pathologists worldwide. “Historically, the US and European nations have led the world in the numbers of practicing anatomic pathologists. While we expect shortages in deeply impoverished nations, it’s astonishing to see the level of shortages in pathologists, particularly in the BRIC nations,” explains Dr. Henderson. “In the future, pathologists empowered by digital pathology will fill that gap.”
Earlier this year, Dr. Henderson formed PathForce, the first global virtual pathology group that operates in “the cloud”. Beginning in 2008 Dr. Henderson started collaborating with PathCentral and Family Health Ministries to provide pathology outreach services to Leogane Family Health Center (FHC), a clinic operated by Family Health Ministries (FMH) in Port-au-Prince, Haiti.

The vision started with the building of a pathology lab to serve cervical cancer patients in Haiti. The incidence of cervical cancer in Haiti is the highest in the Western Hemisphere, 30 times higher than in the U.S. Officials at Leogane FHC say 1 in 20 women at the clinic have advanced, untreatable cancer. According to Dr. Henderson, it was common for patients to wait as long as six months for their lab results - an unacceptable turnaround time for the United States.

Unfortunately, the devastating 2010 earthquake in Haiti brought AP lab development to a halt. The quake obliterated the infrastructure and fueled a staggering shortage of qualified pathologists. The sole pathology lab that operated in the area before the earthquake was leveled, and the physician’s OB-GYN practice was extensively damaged. Dr. David Walmer needed help, and more than 300 patients needed answers.

Dr. Henderson immediately agreed to help diagnose existing cases. In lieu of building bricks and mortar, Dr. Henderson used combination of digital pathology and a cloud-based lab information system to connect his practice in Silverdale, Washington, some 3.500 miles away, to Haiti.

Dr. Henderson’s passion for helping meet patient needs in Haiti spurred the development of a global pathology network. Six mission-driven pathologists from Washington, North Carolina, California, Toronto Canada, Israel and Saudi Arabia now comprise PathForce.

To date, the Pacific Pathology Partners lab and PathForce have processed and diagnosed nearly 600 Haiti cases. Turnaround time currently stands at about 14 days from the day specimens are shipped from Haiti to diagnosis and return, explains Cole.

According to Henderson, “This was an incredible opportunity - one of those experiences you remember for the rest of your life. I’m just an ordinary pathologist on a mission to change how we practice pathology,” says Dr. Henderson.

“At every conference and meeting of my colleagues I diagnose a Haiti case for the audience [just as he did for this writer over dinner]. My personal goal is to develop a global pathology network to champion digital pathology so that all patients, regardless of their ability to pay, including those in Haiti, receive timely, accurate, and hopefully the life-saving diagnoses they deserve.”

— Gregory S. Henderson, M.D., Ph.D