

Digital Pathology Launched in the ‘Era of COVID-19’

➤ Memphis lab company makes the business case for scanning slides to cut costs, boost productivity

» CEO SUMMARY: *Is it smart to initiate digital pathology (DP) systems and whole-slide imaging just as a novel coronavirus upends healthcare and society at large? That was the question asked at Poplar Healthcare, a pathology lab in Memphis. Senior management proceeded with the implementation, despite the uncertainty that accompanied the SARS-CoV-2 pandemic. Nine months later, the early experience with digital pathology has been successful and Poplar now enjoys lower costs and new clients.*

LIKE TWO TRAINS ON THE SAME TRACK APPROACHING A HEAD-ON COLLISION, a large pathology group's scheduled implementation of digital pathology systems ran directly into the full effect of the COVID-19 pandemic when it hit with force last March and April.

The good news is that this collision of a planned roll-out of a digital pathology (DP) and whole-slide imaging (WSI) solution during the SARS-CoV-2 outbreak turned out well for **Poplar Healthcare**, an anatomic pathology group in Memphis with 25 pathologists. Poplar is beginning to realize the benefits of digital pathology and WSI in its daily workflow.

Poplar's foray into digital pathology began in 2018, when Poplar's managers started on an 18-month process of defining needs, selecting scanners, and choosing the overall digital pathology management system.

In September, James P. Sweeney spoke at THE DARK REPORT's *Executive War College* regarding Poplar's entry into digital pathology. His co-presenter was Lisa-Jean Clifford, Chief Operating and Chief Strategy Officer for **Gestalt Diagnostics** in Spokane, Washington.

During their presentation, Sweeney discussed Poplar's pathway to adoption of digital pathology and whole-slide imaging and Clifford discussed Gestalt Diagnostics' PathFlow system. "Late in 2017, right after we merged with **Bostwick Laboratories**, we brought the idea of investing in digital imaging systems to the board of directors," he said. (See, "Memphis Path Lab Pivots to COVID, Pooled Testing," TDR, Dec. 7, 2020.)

➤ Evaluating DP Systems

"During that initial phase, we spent about nine months talking to different vendors to understand the steps they were taking to obtain clearances for their systems by the FDA and to develop their hardware systems," he said. "We also wanted to understand how digital pathology systems need to be validated."

In 2013, the **College of American Pathologists** (CAP) issued guidelines for pathologists seeking to self-validate on the digital pathology systems they were using. By giving AP groups the steps needed to self-validate WSI systems, these CAP guidelines could enable pathologists to be agnostic about which imaging systems

they could use to review cases without waiting for FDA clearances.

"In that initial phase, the biggest concern that the board had was the cost of a digital pathology system," Sweeney reported. "They wanted to know how much each scanner would cost, how many scanners we would need, and what other equipment would be required."

➤ Capital Outlay for DP System

"Because our big concern was the capital outlay, we proposed different payment models to use in acquiring the scanners and DP systems," he explained. "Instead of making a big capital investment, we looked at other forms of funding that were more like reagent rental agreements.

"We settled on a per-case cost that reduced our up-front spending while allowing our DP program to pay for itself through savings and revenue growth," noted Sweeney. "We also knew that we needed to be careful when choosing a scanning system. We did not want to choose one that would limit our ability to serve any pathology practice in the United States or potentially any pathologists overseas.

"Our goal was to stay agnostic and use an open system that gives our pathologists the flexibility to interpret images from any other scanning system," he noted. "At that point, we turned to Gestalt. Their system includes that flexibility and it can send and receive images to and from multiple imaging systems and can interface with virtually any artificial intelligence (AI) applications."

➤ Digital Pathology's Benefits

Now, as 2020 comes to an end, Poplar Healthcare has realized five significant benefits from using digital pathology systems. Sweeney says those benefits are:

- "First, it lowers costs by eliminating the need to ship glass slides to remote pathologists."
- "Second, it improves the productivity of remote pathologists, because the

whole-slide images can be sent instantaneously to a pathologist along with the case information, and both are viewable at the same time within our case viewer.

- "Third, it allows remote pathologists to share digital images for second opinions, consults, or to refer difficult cases back to our subspecialists for review or for interdepartmental review."
- "Fourth, it provides faster turnaround time for results, which helps us gain new clients."
- "Fifth, it provides a platform to increase revenue by delivering services to customers seeking to reduce their histology costs and to incorporate whole-slide imaging."

Under a model in which Poplar Healthcare works remotely with anatomic pathologists located within physician practices, some of its revenue comes from doing the technical component (TC), some comes from the professional component (PC), and some comes from doing both TC and PC (or global).

➤ TC, PC, Global Opportunities

"Of our daily volume, about 65% is global, and the other 35% is either TC or PC," Sweeney reported. "By that, I mean a hospital or pathologist somewhere asks us to make glass slides and to send those slides out to them, or someone makes glass slides and sends them to us to read."

"Digital pathology lends itself to supporting this model of business," he added. "Slides can be produced efficiently in our 114,000-square-foot CLIA-certified laboratory, scanned, and then transmitted to pathologists anywhere in the country. Special stains and IHCs [immunohistochemistry] can be ordered and performed immediately."

In addition to working with pathologists in physician practices, Poplar Healthcare also works with hospitals in Tennessee and other states in the Mid-South. "We currently provide pathology

Considering Open and Closed Systems When Choosing Digital Pathology Solutions, Scanners

ANATOMIC PATHOLOGISTS SEEKING BEST-IN-CLASS VENDORS for digital pathology systems (DP) or scanners to produce whole-slide images (WSI) should look first for vendors that support a variety of WSI hardware and software, said Lisa-Jean Clifford, Chief Operating and Chief Strategy Officer for Gestalt Diagnostics in Spokane, Washington.

"The best systems will be those that sit on top of whatever infrastructure the anatomic pathology laboratory already has," Clifford explained. "That's the key to deploying digital pathology systems."

"Many vendors support only the workflows and applications that work with their own hardware and those systems are unable to incorporate multiple different applications (such as laboratory information systems and scanners)," she noted.

"That's something that many of the earliest DP and WSI vendors didn't realize," she added. "Or, they didn't think about the fact that the whole premise behind digital pathology is to be able to expand its use to any pathologist working in any location at any time."

➤ Open vs. Closed Systems

"That means pathology groups considering DP and WSI need to be aware of the differences between open versus closed systems," Clifford explained. "If a vendor is one of the large digital imaging system companies, and its system works only with its other systems, then pathology groups using these types of closed DP systems are limited in how they can expand."

"How does an anatomic pathology group wanting to work with other pathologists in remote locations make that closed system work without a substantial

investment each time?" Clifford asked. "What happens if an AP laboratory wants to deploy its choice of a DP system to other pathologists or to hospitals outside of their organization or service area?

"That laboratory would not be able to integrate its systems without buying all new scanners, other hardware, the image analysis and artificial intelligence software, and the operating system," she warned. "Without that, they can't play in that environment."

"With a closed DP system, it's challenging for a pathology group to share different image file formats and data," she noted. "That inability to share files and data defeats the purpose of digital pathology, which ideally includes the ability to streamline workflow, to automate imaging systems, and to make them all interoperable."

When Poplar Healthcare in Memphis implemented a whole-slide imaging system for its pathologists who work remotely, the AP group also deployed Gestalt's PathFlow system, Clifford said.

"Our solution to the problem that many AP groups have is a digital pathology platform called PathFlow that includes an image management system, a viewer, and an integrated workflow," Clifford explained. "In this open system, the pathologist works in a cockpit from a worklist that includes the slides that need to be reviewed that day or that shift. It also has an integrated reporting system, voice recognition, artificial intelligence, and image analysis."

"The key to our system is that it is completely vendor agnostic," she added. "That's been our premise from the beginning and that means our open system can work with any scanner from any scanner vendor."

services for a number of small hospitals,” Sweeney noted. “That means we can now discuss the possibility of managing the histology departments that exist in many of the hospitals in our region.

“If we do that, we could help them save costs by making the glass slides, scanning those slides, and sending the images back to the pathologists in those hospitals,” he explained. “The pathologist in that hospital could be an employee of Poplar Healthcare or could be a hospital employee, or that pathologist might work for another pathology group practice.”

While working remotely with pathologists in hospitals and physician groups outside of Memphis, Poplar Healthcare also could add international pathology clients. “By some estimates, about 75% of the world’s pathologists reside in the United States,” Sweeney reported. “So, when we talk about the future of pathology, there is a significant opportunity for AP groups in the United States to read cases from anywhere in the world.

➤ Overseas Opportunities

“Doing that would allow us to provide care to patients in many different countries,” he commented. “To date, we have not begun selling outside the United States, but we are talking about how we might do so.”

For Poplar Healthcare, dermatologists also are an area of interest to grow its digital pathology business. “During their residency training, dermatologists get experience in pathology by reading their own cases,” he said. “We are working with companies developing AI applications that will assist with digital triaging of cases, allowing dermatologists to do their own case reviews.

“We simply need to confirm that they have high-resolution monitors and that the dermatologists have been validated through CAP’s validation process for primary diagnosis,” he added.

“We are very excited about the future of AI in anatomic pathology,” commented

Gestalt Diagnostics Wins Workflow Award

IN TODAY’S INCREASINGLY COMPETITIVE MARKET FOR ANATOMIC PATHOLOGY SERVICES, pathologists need a world-class productivity and workflow solution that supports digital pathology and allows them to protect existing clients and expand market share. That’s why a recent award may be of interest to many pathology groups.

In recent months, *CIO Applications* magazine published its current list of the “Top 10 Workflow Solutions Companies.” One of the companies recognized was Gestalt Diagnostics, based in Spokane, Wash., which developed and sells its pathology workflow solution PathFlow.

CIO Applications recognized Gestalt for its solution to convert conventional anatomic pathology manual processes and workflow to an “electronic digital workflow.”

Gestalt says its PathFlow solution “provides a full image management system, robust case routing, a universal viewer, integrated artificial intelligence, image analysis algorithms, and reporting.”

Gestalt’s Pathologist’s Cockpit provides a single, streamlined, fully interoperable workflow that enables pathologists to interpret and sign out their cases.

Sweeney. “There are numerous companies developing algorithms for quality assurance, primary review, and digital triaging, to name a few.

“Each of these applications will have a place in the future,” he concluded. “Although there is much work to be done before those applications are ready for prime time, we plan to be on the front of that curve.”

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