Michigan Hospital Converts to PACS, CR, DR, in Six Months

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HOSPITAL ON TRACK TO SAVE $1 MILLION IN FIRST YEAR

Radiologist Brad Van Assche, MD, reads an imaging study on a Kodak diagnostic workstation. Since installing a Kodak DirectView PACS system 5, images are read on soft copy.

Alpena General Hospital of Alpena, Mich., made a bold entry into the digital world by installing PACS, CR and DR technology over the space of just six months.

The purchasing process started more than a year ago when Director of Radiology Paul Sylvester began to examine PACS vendors and systems. He wanted a system that was affordable and efficient, with highly featured remote access and the excellent image quality required by radiologists and specialists.

After evaluating several vendors and conducting site visits, Sylvester selected the Kodak DirectView PACS system 5 platform. "I liked the flexibility and open architecture of Kodak's PACS platform and the features that it provided, and I was extremely impressed with the Kodak DirectView web distribution system," he reports. "Both systems are equally important because we need a platform that would serve our hospital's needs, but we also need to send high-fidelity images electronically to remote specialists for consultation and to referring physicians."

Hospital CEO John McVeety, COO Al Moe and CFO Damone Sorensen understood the efficiencies digital image capture and management would provide and supported the staff's ambitious implementation plan. The 146-bed hospital in northern Michigan is currently on track to save $1 million a year over the next two years, as estimated by an outside consultant.

In choosing a vendor for this complex project, Sylvester appreciated the Kodak team's understanding of the department's imaging workflow and their desire to design a solution that met his hospital's needs. "Other vendors visited

Steve Smith, RT, is the PACS manager at Alpena General Hospital. The hospital was one of the first in the country to install a Kodak DirectView PACS system 5.

> "Kodak was the only vendor that demonstrated that they would design and support a solution that was the right fit for our facility."

Cyndi Hutchinson, RT(R)M, examines a radiograph printed from a digital file on the Kodak DryView 8700 laser imager.

us to present a proposal, but the Kodak team really did their homework. They visited our hospital, analyzed our workflow and processes, and talked to my staff and radiologists about our needs. Then they came back with a proposal that described how their PACS platform would address each of our requirements."

He adds that "Kodak was the only vendor that demonstrated that they would design and support a solution that was the right fit for our facility."

PROFESSIONAL SERVICES PLAY A VITAL ROLE

Designing the right solution began with Kodak Professional Services engineers, who evaluated and then upgraded the hospital's network and then validated all the modalities. "Kodak engineers worked with our network administrator, Steve Mousseau, and the IT staff to analyze and upgrade our hospital network. They also worked with other vendors to ensure that each modality sends DICOM-compliant images to the PACS. We now have worklist management on every modality, which boosts the productivity of our technologists and eliminates data entry errors."

Alpena General Hospital also installed a Kodak DryView 8700 laser imaging system prior to PACS implementation. "We wanted to eliminate wet processing and we wanted a

fully featured laser imager. The DryView 8700 system met that requirement. It also reliably produced 20,000 images a month during the conversion."

PROJECT MANAGER SUPERVISES DESIGN, INSTALLATION

The hospital retained a Kodak project manager to work with Sylvester and PACS Administrator Steve Smith during design and installation. "Converting to a digital environment touches every aspect of operations in a radiology department and also changes the way we interact with our physician clients," Sylvester explains.

"It is extremely important to have someone with PACS experience that is dedicated to coordinating the entire process and making sure that all issues are addressed and that everything happens when it is supposed to. Our project manager did an excellent job of supporting us from the beginning to the end. He supervised everything from the initial network upgrades to the final physician training sessions."

The Kodak DirectView PACS system 5 has proved to be as reliable and efficient as promised. The PACS is integrated with the hospital's RIS using its HL7 interface. It provides a central database for both images and reports, which is a tremendous advantage because records can be updated

once, and those changes are immediately available throughout the system, according to Sylvester. Imaging studies and reports are currently stored on a RAID system and then backed up to tape after hours.

Radiologists read imaging studies at diagnostic workstations and then images and reports are routed to remote areas using both the hospital network and the new Kodak DirectView web distribution system. The hospital has four diagnostic workstations and eight PCs on the floors and in other areas. Imaging studies and reports are sent over the network for ER and ICU and to workstations on the floors using the Web-based system. Soon images will also be routed to flat panel monitors that are being installed in the surgical suite.

ELECTRONIC DISTRIBUTION TO PHYSICIANS IN SIX COUNTIES

Remote physicians can access imaging studies and reports using a virtual private network. In addition to providing access to authorized physicians, the Web-based system enables the hospital to email key images and radiology reports to referring physicians. Electronic distribution is extremely attractive since Alpena Hospital serves physicians and their patients in six rural counties. Imaging studies and reports can also be written to CDs that can be played on PC and Macintosh platforms.

> "Most Web distribution systems provide limited tools, but this platform supports the same functionality as the primary PACS workstations."

Paul Sylvester, RT, is Director of Radiology at Alpena General Hospital. Sylvester spearheaded installation of a Kodak DirectView PACS system 5 because of the system's flexibility, features and open architecture.

The Web distribution system also simplifies maintenance by allowing all upgrades to be performed at the server level, so there is no need to touch remote users' workstations. Special software at the user level is not required.

Sylvester recognizes the flexibility this system provides, but adds that its image quality and compression techniques were the primary factors in its selection. "The compression method this system employs provides accurate image transfer, and provides conversion from lossy to lossless with a single mouse click. In addition, compression rates are based on the anatomy present in each image being downloaded. So the system progressively downloads imaging studies in layers of increasing resolution and allows users to manipulate initial image layers before the final layer arrives. This is a huge timesaver for specialists who are viewing the entire study and to remote radiologists who are conducting after-hours readings."

Radiologists and physicians also praise the ability to use the same features that they use at hospital workstations, Sylvester notes. "Most Web distribution systems provide limited tools, but this platform supports the same functionality as the primary PACS workstations, which our physicians really appreciate."

Selection of CR, DR platforms

After the PACS selection process was complete, Sylvester evaluated CR and DR platforms from several vendors. "We were already working with a consultant to evaluate our workflow and provide a return on investment for PACS and CR. When I asked the consultant if we could justify DR, he didn't hesitate to recommend it. Based on his experience in studying workflow, he felt that it was entirely appropriate for our hospital," Sylvester says.

Primary selection criteria for both CR and DR platforms were image quality, ease of use and efficient workflow.

"Our team talked to technologists at other hospitals during site visits to evaluate the efficiency of the workflow and ease of use. Our radiologists viewed imaging studies produced by several different vendors to assess image quality," Sylvester explains.

"Kodak's CR and DR platforms were unmatched for ease of use, and radiologists preferred images from the Kodak CR

Amanda L. Thomson, RT(R), positions a patient for a procedure using a Kodak DirectView DR 9000 system. This digital radiography system provides digital image capture of a wide range of general and trauma exams thanks to its U-arm design.

and DR systems. I really liked Kodak's all-in-one CR design much better than having a separate quality assurance workstation, and I was very impressed with the DR system's ability to efficiently handle such a wide range of exams."

DR system captures almost half of general radiology exams

Today almost half of the hospital's 64,000 radiology imaging procedures a year are captured with a Kodak DirectView DR 9000 system that handles inpatient, outpatient and trauma patients. Because of the full range of motion provided by its ceiling mounted U-arm, the DR 9000 system offers the ultimate in flexibility for chest, extremity, abdominal and trauma exams. Exposed images are ready for review in less than 10 seconds and cycle time is only 38 seconds.

Two Kodak DirectView CR 850 systems support another general exam room, two fluoroscopy rooms and portable exams. The Kodak CR 850 systems offer a throughput of up to 104 cassettes an hour and are ideal for distributed applications.

Student technologist Robert Richardson reviews an image on the Kodak DirectView CR 850 computed radiography system. The Kodak CR 850 system offers a throughput of up to 104 cassettes an hour.

Even so, the DR system is more productive, Sylvester says, primarily because it eliminates the task of walking to a workstation to process cassettes. "Kodak's new CR 850 platform is one of the fastest available, so our technologists do not wait long for cassettes to be processed. But the DR system is still faster because images are captured and available for viewing in a single step that takes less than 10 seconds."

Sylvester views CR and DR as complementary technologies. "It doesn't make sense to install new x-ray systems and more expensive image capture equipment in every exam room. But it does make sense to install it in your highest volume area—especially since we had to replace an outdated x-ray system anyway."
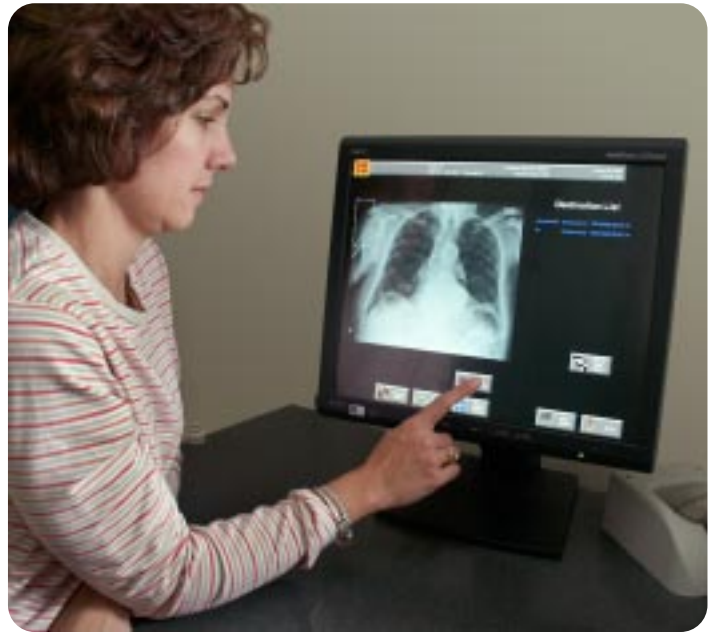
Shared CR, DR operator interface improved productivity

He adds that purchasing CR and DR systems from the same vendor was not one of his initial objectives, but it worked out to his benefit. "One of the key advantages of purchasing both Kodak CR and DR systems is the shared operator interface. Initially I didn't realize how important this could be, but it doesn't take long to discover that since all of our technologists use both systems, having the same interface boosts productivity. And it greatly simplifies training."

Another key advantage that Sylvester discovered was the productivity enhancements that result from use of Kodak DirectView EVP software for both CR and DR images. "Our radiologists recognized that the images from the Kodak systems provided better detail and contrast. What we didn't know was that these images are so good that very few adjustments are needed. That creates faster diagnosis for STAT cases, rapid delivery of reports and greater productivity for our radiologists."

Understanding of radiology operations

Now that his facility has converted from film to digital imaging, Sylvester has some advice for others who are a few steps behind him on the technology curve.

Kelly Blade, RT(R)M, verifies the quality of an image using the operator console of the Kodak DirectView DR 9000 system.

"We are extremely pleased with both the installation process and the productivity and performance achieved by our digital imaging solution. For others who are considering conversion, I think it's important to work with a company like Kodak that clearly understands how a radiology department operates, offers a flexible digital imaging and information platform, and is willing to design a system that meets each individual facility's needs."

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