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THE WAY... ACADEMIC/TEACHING HOSPITALS
STAGE 3 EMR ADOPTION SCORES INCREASE

NEWS ON EMRS

Urban hospitals will continue to increase their EMR environment capabilities, because patient safety and outcomes results will determine the winners and losers in this market.



Reaching Out

Mercy Medical Center in Des Moines, Iowa, provides PACS storage and archiving to its affiliated rural hospitals at an affordable price.

By Diana Olsen Friedman

> WHAT HAPPENS WHEN A PATIENT IN RURAL CENTERVILLE, Iowa, comes into the emergency room (ER) with a spinal cord injury? The doctor at the local hospital has an important decision to make: Can we treat the patient here or does she need to be transported to Mercy Medical Center in Des Moines — about 90 miles away — for more specialized care?

Now that ER doctor has some help. An X-ray taken in the Centerville ER can be uploaded to the hospital's picture archiving and communications system (PACS) and a specialist at the Des Moines hospital can view it immediately — making an informed decision about whether a potentially risky transfer is necessary.

The PACS that makes this possible originated with Mercy Medical Center - Des Moines, but affiliated rural hospitals in Centerville, Winterset and Decatur County are reaping the benefits thanks to an innovative storage program. Rural hospitals can purchase image storage and archiving from Des Moines at a significantly reduced price, while utilizing the medical center's backup, disaster recovery and PACS-savvy staff — components of long-term storage that most rural hospitals would have trouble funding on their own.

Building the foundation

Mercy Medical Center — Des Moines recognized the opportunity to offer storage to its rural counterparts when the hospital upgraded to version 10 of Carestream Health's PACS. "As we looked at Carestream Health and the upgrade process, we began to see functionality to become a storage facility for rural hospitals if they have the capability to send images," said Deane Baldwin, PACS administrator at Mercy Medical Center — Des Moines.

When Des Moines upgraded its PACS, Roger Wilson, systems and networking manager at the medical center, devised a new storage area network infrastructure that bolstered disaster recovery efforts. The medical center has replicated its storage capabilities, with primary capacity at the main medical center and secondary capacity about 5 miles away in a light-out data center. Clustered servers and a tape backup mean that if either of the two facilities goes down, no studies will be lost. "It's just a matter of driving over and turning on some servers," said Baldwin. Having redundancy and reliable disaster recovery "was the springboard to offering long-term storage to other facilities. Once we had that in place, we felt we could go forward with other hospitals."

Mercy Medical Center — Des Moines offers long-term archiving and storage to any of its affiliated rural hospitals, three of which have accepted the offer so far. "We came to a mutual agreement on how much it will cost for us to provide these services, and the local hospital pays for bandwidth and local imaging studies, as well as its on-site PACS," said Wilson.

Updates, at the patient and study levels, occur in the PACS without having to use a separate broker.

Rural hospitals can choose an on-site PACS from any vendor, although all three have chosen Carestream Health so far. "One of the main reasons I think our affiliates are choosing the smaller version of the Carestream Health front end is that there's a process in the servers that allows them to 'talk' to each other," said Baldwin. "Updates, at the patient and study levels, occur in the PACS without having to use a separate broker, like a common health information system or radiology information system, for each of the sites." This saves the rural hospitals the cost of paying for an additional system. "These add-ons can be very expensive." However, Baldwin pointed out that Mercy Medical Center can provide storage for any vendor that can send images.

Opportunity knocks

For Kevin Bradley, RTR, CT, RDMS, CNMT, RVT, the director of radiology (and now PACS administrator) at Mercy Medical Center — Centerville, the benefits of having PACS were clear. But finding a way to finance the project was not. The hospital received a \$100,000 grant to purchase computed radiography equipment, "which got us into the digital ballpark," said Bradley.

But until the hospital purchased the actual PACS component, it was still a print-and-file operation. There was no long-term storage to speak of, and the hospital initially considered storing images on tapes and manually taking the tapes to a local bank deposit box every day.

Des Moines' ability to store and archive images was a welcome service that helped Centerville make the leap to PACS without relying on a cumbersome tape-saving process. Aside from storage, Des Moines also offered other services that the rural

hospital lacked, including several years of experience with PACS support.

"We really leaned on [Des Moines] for experience. Our IT person didn't have a lot of experience with PACS and we don't have a real PACS administrator," said Bradley. Having the infrastructure and experience in place in Des Moines was a huge benefit to the rural hospital.

Centerville has both a T1 connection and a fiber connection, but "we found that the T1 connection wasn't going to handle things as fast as we'd like," said Bradley. The fiber connection was put in place as part of the Iowa Communications Network, and it's the hospital's infrastructure of choice due to the ability to scale up the bandwidth when necessary.

Access issues

Mercy Medical Center purchased Enterprise Information Management (EIM) from Carestream Health to manage the distribution and storage of each facility's images. Each facility that sends exams to Mercy Medical Center's PACS has a specific site ID. "If a study from facility A comes into Mercy PACS for long-term storage, we know where that study resides on the disk array based on the site ID," said Baldwin. "The site ID also allows us the freedom to efficiently handle exams that we don't want to store long-term. A few rural facilities send us exams for interpretation only, so we keep these studies for a limited time and then delete them."

"We've had PACS for about seven years. In theory, we've had the ability to [store images for other facilities] for years, but we didn't have the ability to do it separately," said Baldwin. The EIM product allows the facility to store the images separately, as well as create access rules. "Unless there's a specific need

Going Off-Site for Storage

▶ SHANDS JACKSONVILLE MEDICAL CENTER, A TEACHING affiliate of the University of Florida, began the search to expand its in-house information technology (IT) infrastructure with limited capital dollars. Shands started with PACS in 2002, including CT and MRI; however, with advancing imaging technology — primarily multi-slice CT and MRI — and the expansion of their PACS to all imaging modalities, the initiative grew beyond expectations and reached a critical point in early 2005. Charles Swenson, PACS administrator and Arif Kidwai, MD, division chief of Radiology Informatics, recognized that future needs would quickly outpace existing storage capabilities.

As Swenson began to examine storage options, he realized that purchasing additional archive hardware solutions would require an up-front capital investment. Maintaining the archive in-house was no longer practical for several reasons: In addition to the threat of natural disasters, Swenson and Kidwai determined that off-site storage also made the most sense for personnel and capital expenditures — and that's when they discovered that the implementation of InSite One's InDex archive solution would resolve those issues.

Shands implemented InDex in its two main facilities and one clinical site, shifting the cost of storage from a capital to an operational expense. Today, Shands generates

250,000 exams each year with this increase in the number of studies, and utilizes additional revenue dollars more quickly by moving storage to an operational expense with fee-per-study pricing.

The entire implementation process was seamless. Shands started sending images from the PACS to InDex in just 24 hours. Today, data is protected and accessible in InSite One's mirrored, geographically dispersed, tier-4 data centers. Whenever physicians need access to older images from an off-site location, the studies load within three to five minutes. And, most important to clinical workflow, Shands no longer maintains everything in-house. This indirectly increases the speed for accessing studies that are under two years old; pulling those priors is nearly instantaneous.

Even though the increased data volume from new modalities and patient volume growth was a key factor in selecting InSite One, another huge benefit has been realized. When Shands needed to migrate data to a new PACS, InSite One became a primary facilitator and coordinator of that process. In addition, in the event of a system failure or disaster, the Radiology, Trauma and Emergency departments can retrieve images directly to their workstations from either one of InSite One's on-site or off-site archives.

for a physician to see a patient from a different facility, we've built in controls that don't allow them to access images from other facilities." This allows each facility to maintain control of its images and satisfies HIPAA requirements.

Conversely, image access can be granted to any physician who has a valid need to see an image of a patient from a different facility. "If one of our patients has an appointment with a specialist in Des Moines," said Baldwin, "that specialist can get direct access to the images. The patient doesn't have to come into our facility, pick up a CD with the images and bring it to Des Moines. That's been the biggest advantage."

"Additionally, we no longer have to worry about film loss," said Baldwin. "Be-

fore PACS, there was always the threat of 'where did that film go?'"

Going forward

"We've had excellent response with our local physicians as far as using the Web to review images in their clinics," said Baldwin. "We have more than 1,400 physicians throughout Central Iowa viewing exams and reports via our Web server."

Centerville has plans to add CR-based digital mammography to its PACS as soon as Carestream Health gets FDA approval for the addition of mammography functionality to its CR platform. "We already have the CR reader, and when the mammography application gets approved, we can just add it to our current system," said Bradley.

As for Mercy Medical Center — Des Moines, the facility will continue to offer long-term storage to its rural affiliates. So far, storage volume is not an issue. "The total volume of the three sites that store exams with us so far is a small percentage of our total volume," said Wilson.

The impact on storage volumes may be small, but the potential impact to Mercy's rural hospitals is quite large. By enabling remote facilities to tie into PACS and providing long-term storage, Mercy Medical Center is providing an extensive infrastructure at an affordable price — a service that benefits patients and providers alike. **HIE**

Ms. Friedman is associate editor for ADVANCE for Health Information Executives.