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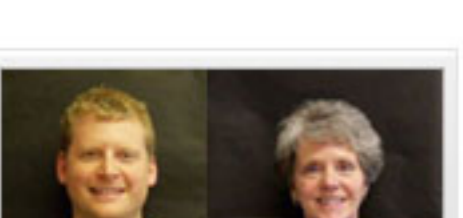
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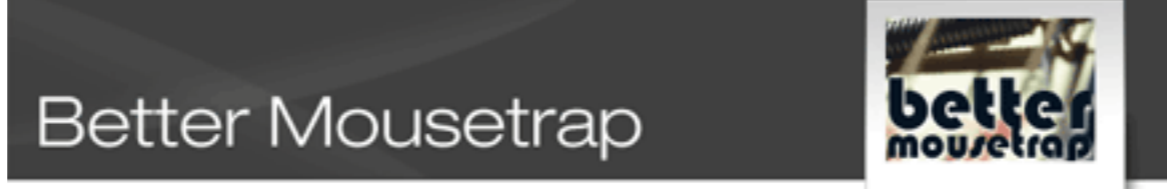
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Better Breast-imaging Workflow: UCSF Case Study

Posted: September 15, 2010

by **Erin Burke**

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When the women's imaging department at the Mount Zion campus of the [University of California-San Francisco](#) (UCSF) began transitioning to full-field digital mammography, workstations were implemented to enable radiologists to manage the digital workflow. The very technology that was intended to harness the potential of digital imaging, however, proved to be limiting on many levels.



Bonnie Joe, MD, PhD

Not only were the workstations unable to display breast ultrasound and MRI, but radiologists could only view one set of prior studies at a time, according to Bonnie Joe, MD, PhD, chief of women's imaging. Another problem was the workstations' inability to communicate with the department's RIS; to compensate, technologists in the department were required to create paper-based worklists and print out copies of patient reports every day. The process was time consuming, and it increased the chances of radiologists missing a patient, as well as creating difficulties in determining which radiologist had read which scan. "The process slowed down patient care, and we were limited by how quickly we could print out a piece of paper," Joe says.

Critical Needs

The process was frustrating for both the technologists and the radiologists, so department decision makers, including Joe, began searching for a solution. "We were limited in terms of what we could tell the workstations to do, and we wanted more functionality," she says.

The UCSF team quickly identified its requirements for a new workflow-management system, including the ability to integrate workstations fully with the department's RIS, HIS and PACS, as well as the ability to read all modalities on them, from digital mammography to breast MRI to ultrasound. Radiologists also wanted excellent image quality and the capabilities of creating hanging protocols and receiving updated annotations for marks made on the same scan at a different workstation.

The new systems also had to be capable of displaying images from the four major vendors used by the mammography department, and would have to work with the breast-imaging/reporting system used to track data, as well as with the department's voice-recognition system.

After a few months of searching, UCSF narrowed the list to four vendors, all of which were invited to the mammography department for a head-to-head comparison test, Joe says. Radiologists rated images on all the machines and ranked the vendors according to image quality, she recalls.

Image quality wasn't the only deciding factor, though. Based on previous experience, Joe understood that the integration aspect of the project wasn't going to be easy, especially given the number of components involved. The UCSF team spent the next year and a half meeting with representatives from these vendors to discuss the department's integration and workflow requirements. Joe found representatives of [Sectra AB](#), Linköping, Sweden, to be realistic in their assessment of the challenges to come. "They knew it wasn't going to be a trivial task, and they were upfront about everything before the contracts were signed," Joe notes.

While some of the vendors considered by UCSF required all-or-nothing commitments to their technology, Sectra offered partial solutions based on the needs of the mammography department, and it was willing to customize its solutions as well. For example, the vendor allowed repurposing of UCSF's old workstations by installing new software and keypads on the existing hardware; because the hospital did not have to replace the three sets of paired monitors, Joe estimates that the department saved about \$60,000.

Joe's continued due diligence and research included speaking with other breast imagers regarding their experience with Sectra; based on that feedback and the other positive contributing factors, her team eventually chose the company. Sectra also offered the "best combination of dedicated mammography features," she adds.

Installation and Implementation

The implementation process began in January 2010, and as both parties had anticipated, there were challenges, some of which were unexpected. One such issue occurred when radiologists queried the Sectra archive for prior images, only to find blank thumbnails. Through research and troubleshooting efforts, the Sectra and UCSF teams finally discovered that another PACS was changing the unique identifier. The issue has since been resolved, but both teams are still working toward a final solution.

The department also experienced a hiccup with the repurposed workstations because not all of the stations had been configured the same way. There was also the problem, familiar to any department undergoing a transition of this magnitude, of resistance to change among the radiologists. "Over time, as we fixed some things and demonstrated workflow improvements, the staff gradually came to like the system," Joe says.

Radiologists who were regular PACS users were able to learn the system quickly, but others required more time to become comfortable with it. A notebook was kept in the department so that radiologists could log problems and errors and suggest changes to the system. Initially, a page or two was filled every day, but that tapered off considerably when Sectra upgraded UCSF to a newer version of the software, six months after the initial implementation. Benefits of the upgrade included better user-interface features, such as the ability to scroll through thumbnail images and easier and more efficient and easy set-up of hanging protocols.

Rapid Results

In the months since the implementation, department workflow has improved considerably. Radiologists can now park a set of images from one case during a diagnostic mammogram and return to them after working on another case; they also can see in real-time if another radiologist is reviewing a case. The technologist can easily view radiologist annotations on a workstation in the exam room without needing to leave her patient to go into the radiology reading room—this is particularly helpful on those rare occasions when the patient is being imaged in a different building from the main reading room, Joe says.

From the beginning, Sectra and UCSF have worked together to perform troubleshooting, with most of the communication between the vendor and UCSF performed via email and conference calls. This is a process to which the mammography department had to adjust, but thus far, it has worked, Joe says. Sectra's project leader has taken ownership of the project and consults experts in IT and applications, depending on the issue at hand; if the issue can't be resolved via email, Sectra has the ability to access the UCSF system to perform remote troubleshooting.

Joe says that she likes to assess the success of the project in broader terms, noting that it has greatly improved efficiency. Today, the breast-imaging department benefits from having as much information about patients available on the workstations as possible, from having ready access to prior studies, and from optimized communication among staff members. Most important, the department has gained the ability to customize its workflow based on its evolving needs. "There will always be some aspect of the system that we'll be tweaking and improving," Joe says.

Erin Burke is a contributing writer for ImagingBiz.com.



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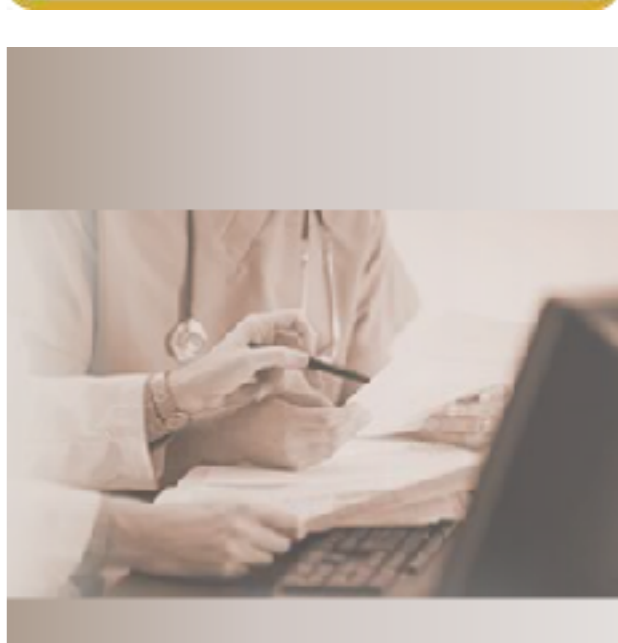
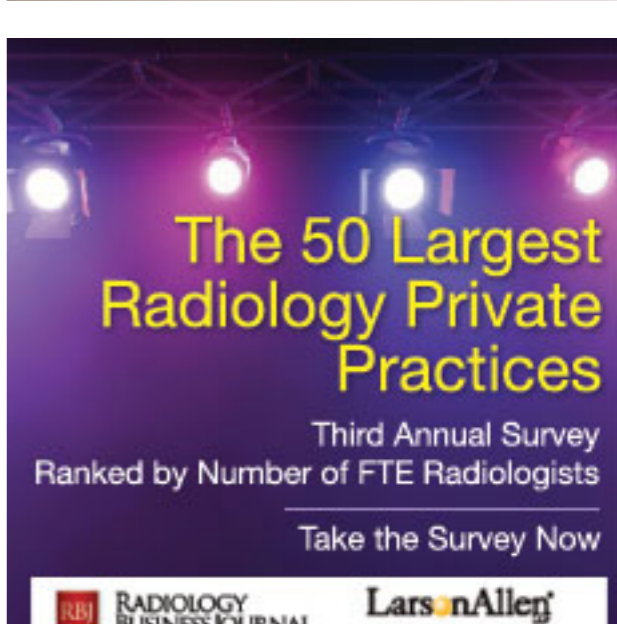
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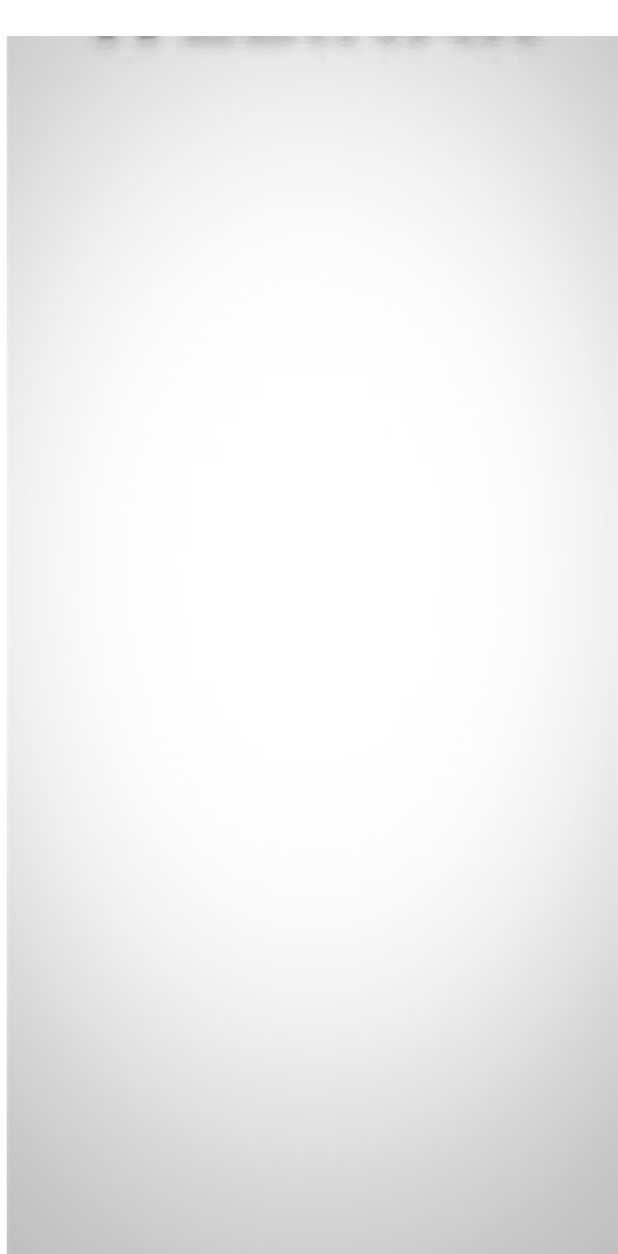


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