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BY JILL FREEMAN-STACK

# MOBILE IMAGING PROVIDER'S TWO-YEAR SEARCH FOR THE "PERFECT" PACS LEADS TO CONNECT IMAGING

Med-Share Diagnostics, founded in 1981, is the largest provider of mobile imaging services in the Midwest, performing exams at four of its own imaging facilities in southeastern Michigan, and deploying 35 mobile units to hundreds of physician offices as well as to homebound patients. Concerned about reaching workflow capacity, controlling costs, and staying competitive, Med-Share began a two-year quest for a PACS (picture archiving and communications system).

Milan Gandhi, Vice President of Med-Share, led the search. Gandhi knew that finding a PACS to fit the company's situation would be a challenge. "Med-Share is committed to providing superior healthcare services in a timely and cost-effective manner," Gandhi said. "Because we offer services ranging from simple x-rays to specialized exams such as echocardiography and nuclear imaging utilizing a range of analog and digital imaging modalities, our requirements for PACS are unique and rigorous."

Med-Share currently supports its complex workflow with a combination of manual and automated applications – most custom-developed by its eight-member in-house IT staff. Each evening, Med-Share staff members collect, sort, and distribute hardcopy images to local and remote reading physicians for interpretation. Digital images are moved to manufacturer-provided "mini-PACS" for reading. Dictation, transcription, and report delivery are done using non-integrated systems, creating a labor-intensive workload. Practice management and billing services are handled by separate software solutions.

## TRADITIONAL PACS NOT A FIT

As the hunt began, it became clear that a traditional PACS system was not the right fit for Med-Share. Designed primarily for large hospitals or university/research environments, conventional PACS systems approach image acquisition and management in a narrowly defined manner that was counterintuitive to Med-Share's distinct and complex workflow. And, with a multi-million dollar price tag, a traditional PACS system was price-prohibitive.

The situation changed, however, at the 2004 Radiological Society of North America meeting, where Med-Share executives interviewed PACS exhibitors – including Connect Imaging, an innovative PACS provider whose market focus was community hospitals and free-standing imaging centers. "Connect's flexibility in configuration through the use of modules was key," Gandhi said.

From the beginning, Gandhi thought the Connect Imaging PACS could be a great fit, but he first had to develop a capital equipment acquisition plan. This included upgrading to state-of-the-art infrastructure and adding new digital imaging modalities that accelerated the transition to a filmless and paperless environment. And, a high-capacity storage area network (SAN) provided the basis for a nearly endless expansion of the eventual PACS network. Gandhi said he believes the delay proved beneficial. "If everything initially had been allocated for PACS, these other needs might not have been recognized and met in a timely fashion," he said.

Gandhi also thoroughly researched other potential radiology information systems (RIS) and PACS. "During this time, Connect Imaging consistently remained on our 'short list' of potential PACS providers," he said. Med-Share wanted a single system that would handle work from beginning to end. According to Gandhi, Med-Share is unique in that it provides diagnostic services in three different ways and bills for services in five different ways, creating a workflow matrix that most RIS/PACS systems could not address. For example, services are provided in Med-Share's own imaging centers, in physician offices, and in patient homes. Med-Share then utilizes all available billing methods, including global insurance billing, component insurance billing, leasing of technician and equipment, and fee-for-service interpretation.

"During the year I researched RIS/PACS solutions, it was clear that other vendors would not modify their products," he said. "In contrast, Connect's modular PACS could be tailored exactly to our workflow and image distribution needs."

## MODULAR PACS FILLS UNIQUE NEEDS

Gandhi met with Connect Imaging again at the 2005 RSNA meeting. "Improvements had made the product even better than before," he said. "It was clear that this was the best PACS for our operation."

In February 2006, Connect Imaging prepared a proposal for a turnkey system. Connect experts conducted two site visits due to the complexity of the workflow. The resulting design proposal was for a customized, comprehensive RIS/PACS. Reviewing the proposal, Gandhi saw that the design addressed all workflow issues. It will include the InStar RIS to automate the flow of information. The RIS incorporates state-of-the-art capabilities, such as patient scheduling and



registration, order entry, exam tracking, charge capture, film tracking, transcription, report distribution, and management reporting. Billing, collection, and reimbursement services will be handled by a practice management solution from Global MD. Estimated cost of the integrated RIS/PACS system is \$700,000.

The PACS system designed for Med-Share will include core modules that forward and store images to the archive and optional modules linked in custom configurations. This mix is a key benefit for Med-Share due to the unconventional retrospective entry of data into the system. Connect's custom module will allow requests from the RIS for studies already performed so they can be processed and forwarded. In addition, Connect's post-processing module will allow automatic corrections to archived studies. These adaptations will permit Med-Share's current workflow to remain unchanged.

At the cornerstone of the PACS are core back-office modules that will run on multiple servers in the data storage array, including:

- A custom module that requests an order for each study received from the mobile modality;
- A standard FileRoom module that stores studies in the archive and creates database entries in the study database;
- A standard DICOM Distributor module that allows studies to be allocated and sent to one of several reading workstations.

To accommodate modalities that do not have DICOM output capabilities, Med-Share required a "lite-PACS" module for many mobile units. An existing Connect module, StudyWorkstation, is available to provide most of the functionality for this purpose. Connect will customize this module in order to minimize data entry errors that can occur when studies are received from modalities and stored for sending to the PACS at the end of the day. Connect also will provide standard ViewBox diagnostic reading workstation modules for radiologists. These modules are ideal for remote reading facilities. Designed to receive studies from the DICOM Distributor and populate local work lists with studies, the modules will allow the interpreting physician to read the studies without waiting for individual studies to download from a central server.

Med-Share also required a method to correct data entry errors, so the RIS will flag all questionable patient demographic information when studies are processed. When flagged, studies are reviewed the next morning and

corrections to patient demographic information will be entered into the RIS and routed to the PACS. A custom post-processing module then will retrieve studies with errors from the archive, make necessary corrections to demographic information, and reprocess the studies to the archive. This process has two benefits: corrections to patient information will need to be made only once, and the PACS archive will contain no patient studies with erroneous data.

Gandhi said that the key to Med-Share's successful partnership with Connect is the company's willingness to customize the system. "Connect put together an integrated system that will function within our structure. When we made unusual requests for specific capabilities that would help our workflow, they always found a way to accommodate us."

### INCREASED PRODUCTIVITY & COST SAVINGS

Med-Share anticipates that the switch to a comprehensive system will increase productivity and reduce costs. For example, reports will be available in two days, compared with the three to four days required using the current system.

Gandhi said tracking individual studies through Med-Share's complex workflow also is important. Now when a study is misplaced, staff members must spend time locating it or, in rare instances, perform a duplicate study. Eliminating these incidents will reduce costs. He expects additional savings when film costs are eliminated, with the switch from analog to digital modalities, and anticipates reduced costs for transportation and personnel time as workflow is automated as studies come online.

### CUSTOMER SERVICE & SUPPORT

With financing now in place, Gandhi estimates that installation and implementation of the RIS/PACS will take approximately two months. Gandhi has budgeted for ongoing technical support, noting that Connect is well-known for superior customer service and the quality of the technical support it provides to clients. An added benefit is that software upgrades are included. "When we call for technical support, we will reach a live person," he said. "Connect personnel can shadow a user in real time, quickly resolving problems."

In summary, Gandhi said that the collaboration with Connect will allow Med-Share to move into a new, exciting phase of growth. "Connect Imaging made a real effort to understand our needs. It tailored its product for the functional outcomes we wanted. Together, we came up with an innovative PACS solution that will be the cornerstone of our enterprise as we continue to grow in the diagnostic imaging industry." +



**Jill Freeman-Stack** is Senior Program Director at Sullivan & Associates, a strategic healthcare communications organization based in Huntington Beach, Calif. Sullivan & Associates works to increase the adoption of new technologies and services that positively impact patient care. Jill is a frequent contributor to medical trade publications. Recent articles include features in *Medical Imaging and Infection Control Today*.