



Tulsa Hospital Achieves Improved Throughput,
Image Quality with KODAK DIRECTVIEW DR
and CR Systems

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ST. JOHN MEDICAL CENTER

Phil Ames and his staff are pioneers in digital image capture technology. Ames is the administrative director of radiology at St. John Medical Center, a 750-bed facility in Tulsa, Okla. St. John has one of the largest installations of digital radiography (DR) systems in the country, and has been on the leading edge of digital image capture with early generations of computed radiography (CR) systems.

On cover—St. John Medical Center is a 750-bed facility serving Tulsa, Oklahoma. The center's new Kodak DirectView DR 9000 system handles at least twice as many patients as CR or film technology.

"We are interested in digital imaging technologies because of their ability to improve image quality and efficiency, and ultimately to enhance service to both hospital and referring physicians," notes Ames.

After installing a Kodak DirectView DR 9000 system in the spring of 2001, Ames was so impressed with the system's image quality, efficiency and flexibility that he has now installed an additional DR 9000 in a new outpatient clinic and a Kodak DirectView 5000 system in each of two standalone outpatient clinics. He has also ordered two DR 9000 systems for the hospital's new emergency room (currently under construction) and a new Kodak DR 7100 for the hospital's general radiology department.

"The image quality of Kodak's DR portfolio is outstanding, even when compared to other DR systems. We performed a series of test images using a line pair resolution phantom with the Kodak DR system and a competitive DR system. Images from the Kodak system were of noticeably higher resolution," Ames reports.

Enhanced Image Quality

Ames attributes some of this image quality difference to the direct amorphous selenium technology featured by the Kodak DR platform. "This direct capture technology definitely promotes optimal image quality," he says.



Reginald Everidge, RT, positions a patient using the Kodak DirectView DR 9000 system. The DR 9000 can efficiently handle chest exams as well as a full range of head, skeletal, extremity, and abdominal exams.

The Kodak DirectView DR 9000 system for general radiography includes a multiplanar motion U-arm design that offers the ultimate in flexibility for a full range of chest, extremity, abdominal and trauma exams.

The Kodak DirectView DR 5000 system provides efficient digital image capture with a servo-linked tube and detector that provides automatic source-to-detector alignment. This dedicated system is ideal for departments performing a high-volume of chest and other upright exams.

The new Kodak DirectView 7100 is a table-based general radiography system with a movable overhead tube that provides the flexibility to perform table views, out-of-table extremity views, and chest and upright imaging through the capability of tilting the table from -15 to + 90 degrees.

Each Kodak DR system features a single operator console that lets the technologist control the detector array and x-ray generation system, as well as access patient data from hospital and radiology information systems.



Reginald Everidge prepares to make an exposure using the DirectView DR 9000 system.

Productivity is also a compelling benefit of DR technology. “Based on our experience, we can handle at least twice as many patients in a DR exam room due to increased efficiency,” Ames notes.

Kodak DR systems boast a 10-second preview and 35-second cycle time, and eliminate the processing required by film and the cassette handling common to both film and CR systems. Patient data is swiftly entered from a worklist, established via a link to the hospital’s radiology information system.

As part of the installation, a Kodak applications consultant trained 30 technicians on three shifts. “Kodak’s effective training program helped us quickly achieve the full productivity of the DR system,” Ames reports. “The trainer took the time to make sure that all of our staff’s questions were answered and helped the technologists feel comfortable with the new equipment.”

St. John’s radiology department conducts 134,000 imaging studies a year at the hospital and an additional 70,000 imaging studies are conducted at two outpatient centers. In the coming year, Ames expects imaging volumes at inpatient and outpatient locations to increase by 10 to 15 percent.

Continued Need for CR Systems

While Ames is obviously impressed with DR technology, he continues to see the need for CR systems as well. Ames has four CR systems in the hospital’s general radiology and fluoroscopy suites, and has installed Kodak DirectView CR 900 systems in each of two outpatient clinics.

A CR 900 performs about 85 exams a day in one outpatient clinic. Ames is pleased with both its throughput and its ability to support multiple exam rooms. “The system’s throughput is impressive, but the remote operations panels are equally important to overall productivity,” notes Ames.

“Placing these panels in exam rooms equips technologists to perform all data entry, QC and other exam functions without leaving the patient. They leave the patient once to process all the cassettes. This is a tremendous



Phil Ames, CNMT, administrative director of radiology at St. John Medical Center, is pictured with the Kodak DirectView CR 900 system, which serves multiple exam rooms in the main radiology department.

improvement over having technologists going in and out several times during an exam. These panels improve both productivity and patient care,” he explains.

Ames selected Kodak CR 900 systems “because they provide excellent image quality, an easy-to-use operator interface and advanced features like the remote panels.” He adds that he purchased the optional Kodak EVP software because it enhances image quality by increasing latitude while preserving contrast and image detail. “The final result is more consistent images, which are preferred by our radiologists,” he says.

Kodak CR Systems Represent Good Value

Ames adds that although Kodak’s list price for CR systems was higher than competitors, it may represent a better value. “I calculated what I would have paid other vendors for QC workstations and other accessories, and I came out money ahead with Kodak’s pricing package.”

While St. John has improved both productivity and image quality with its implementation of CR and DR systems, Ames says the ultimate test is providing better service to physicians.

“Efficient digital image capture systems are an important element in improving workflow. But you also have to institute equally efficient digital processes to support the delivery of images and radiology reports to physicians,” he notes.



Reese E. James, MD of Tulsa Radiology Associates examines images acquired using the DirectView CR 900 system and printed on the DryView 8100 laser imager.

Efficient System for Image Access

St. John has installed equipment to manage and store digital images. Most images are read as soft copy on diagnostic workstations. A new voice recognition system converts dictation into radiology reports, while a web-based distribution system makes current and previous digital imaging studies available in seconds from a dedicated server.

“STAT images are available immediately, and routine imaging studies and reports are available to physicians inside and outside the hospital in about 1 1/2 to 2 hours. Routine processing used to take three days. Speeding up the turnaround has greatly improved

physician satisfaction and productivity,” Ames says. Reflecting on his facility’s accomplishments, Ames is pleased with St. John’s conversion to digital image and information management technology. “I am very satisfied with the equipment we have selected and the vendors we have chosen. I commend Kodak for providing excellent, leading edge imaging technology and backing it up with knowledgeable sales and service personnel. They helped us set new benchmarks for image quality and efficiency.”

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