# Imaging experts perform cardiac scans by remote control

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UCLA radiologists and Siemens Medical Solutions have developed remote-control software that enables an off-site imaging expert to operate a magnetic resonance imaging (MRI) machine via the Internet. Reported in the November issue of *Radiology*, the study found that the quality of the remote scans were superior to onsite scans by a less experienced technologist, suggesting options for helping facilities or regions with limited medical staff and expertise.

"Some patients require specialized scans that not all technologists are familiar with, so we set up a software program that enables us to run the MRI machine from a remote location," said lead author Dr. J. Paul Finn, chief of diagnostic cardiovascular imaging and professor of radiological sciences at the David Geffen School of Medicine at UCLA. "A more skilled technologist can log on from a personal computer and perform the exam via remote control."

The program provides access to specialized MRI skills wherever they are needed -- even if that expertise is not available where the MRI machine and patient are located.

Here's how it worked in the study. From his office computer, Finn, a radiologist with 15 years of experience in specialized cardiovascular MRI scanning, logged onto the password-protected program, input all imaging parameters and controlled the MRI scanner during the exam.

Half a mile away at UCLA Medical Center, an onsite technologist

provided the patient with instructions, monitored patient safety and injected contrast material if needed.

Finn scanned 30 adult and pediatric patients from his office. Another 30 age-matched controls underwent traditional MRI scans by an onsite technologist at the hospital. The same MRI machine was used for all scans.

In a blind comparison, UCLA cardiovascular radiologists evaluated the images for definition and quality. They rated 90 percent of the remote scans as "excellent" versus 60 percent of the onsite scans. An additional 50 patients scanned with the remote-control technique after the study was accepted for publication also resulted in excellent images.

"If our results become widely applicable, they may offer important implications for the use of specialized MRI techniques in patient care, clinical research and technologist training, particularly in countries with limited medical resources," said Finn.

The study featured some of the most demanding scans conducted at UCLA Medical Center, including scans of children and infants born with heart disorders. Finn's team reasoned that technologists performing these tests might require specialized assistance the most.

These types of diagnostic scans are among the most complex currently undertaken with MRI, suggesting that the findings can be generalized to non-cardiac MRI studies.

"In collaboration with Siemens, UCLA has already established interstate and transatlantic remote-control connectivity, and initial results are very promising," said Finn. "As the Internet's speed and reliability increases, it seems inevitable that distance will pose no barrier to the global application of this technology."

Finn emphasizes that the same technology could be applied to computed tomography (CT)--especially for use in an emergency setting, such as a natural disaster or on the battlefield. Such events can overwhelm local resources, where technologists trained in specialized imaging techniques may be hard to find.

Source: University of California - Los Angeles