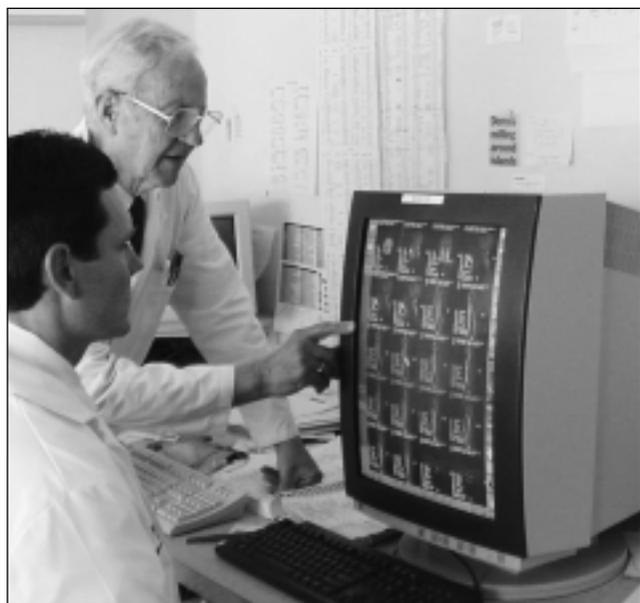


Transforming Business Practices with Teleradiology

The first time I met 71-year-old Dr. Graham was when he picked me up for a planning meeting on teleradiology. As I got into his car, I noticed an MPEG player between the two front seats, just as he said "Doesn't it just make you sick that they are shutting down Napster?" Well, I said to myself, here's a fellow who really picks-up on technology! And technology is just what we'd be using to transform his radiology practice.

Dr. Graham is the energetic, community-minded radiologist /owner of Manatee Diagnostics Imaging Center, overlooking the Manatee River in Bradenton, Florida.



Dr. Angus Graham reviews electronic exams.

When we met, he was trying to solve a resource problem common in vacation communities: how to manage the seasonal variations in exam volumes with the same staff and equipment. He is facing an even greater challenge with the nationwide shortage of radiologists; it is difficult to find a third radiologist and the shortage allows them to command a higher-than-usual income. So what's a high-tech guy

to do? Looking for creative solutions, Dr. Graham called International Radiology Group (IRG) from Dallas, TX.

International Radiology Group is a full-service outsourcing radiology company whose customers include many DOD hospitals as well as community hospitals and currently provides services to over 26 different states. IRG offers two types of reading services: analog and digital.

Utilizing their analog option, exams arrive at IRG next day via Federal Express. The analog option requires exams to be packaged and sent to IRG where they are triaged by exam type and made readily available for interpretation by IRG's radiologists. Upon completion, the studies are returned in the same fashion they were sent and the reports are delivered to the client or referring physician through email, fax or electronic link the same day.

Dr. Graham felt this was a fantastic service but knew there would be times in his practice that he and the referring physician would need access to the study while in transit. Choosing the digital solution offered by IRG resolved this concern. The teleradiology option also eliminated shipping costs and reduced labor costs for both Dr. Graham and IRG. Dr. Graham felt it better to invest the saved money into a teleradiology solution that would also become the beginning of his filmless center, producing even greater savings.

With the teleradiology system, exams are electronically sent, sorted and read on monitors by either on-site radiologists, such as Dr. Graham, or IRG's radiologists. Transmitting exams electronically provides two advantages; the exam never leaves the facility and both Dr. Graham and IRG have access to a diagnostic-quality image. The referring doctor and the patient benefit because the exam images are always available for instant reporting, thereby reducing the report turn-around time.

After meeting with Brian Hall, IRG's COO, Dr. Graham elected to use the teleradiology method of exam transportation. The ability of IRG to read hard copy plain film sent via Fed Ex is a big plus for IRG in case the Internet connection is ever down for an extended period. Sending the films priority overnight provides a backup. Also, the screening mammogram examinations are not able to be digitized and have to be sent via Fed Ex. Dr. Graham said

IRG's ability to handle hard film and digital images was unique in his investigations and a big advantage to an imaging center switching from a film-based radiology practice to digital teleradiology.

Next, IRG contacted their teleradiology system partner, BRIT Systems, to implement the system. That process started with a meeting at Manatee to conduct a site survey, meet Manatee's staff, and discuss integration issues and lunch with the white pelicans in the historic fishing village of Cortez. A plan was drafted, revised with comments from the Center, and set into motion.

Data acquisition occurs at two imaging centers that are connected by a private network. Direct DICOM connectivity, frame grabbers and film digitizers are used to acquire the images and send them to the local DICOM server/web server. From there, the exams are sent to IRG's own DICOM server/web server via a VPN. Manatee Diagnostic Center uses a T-1 line connected to the Internet; IRG uses a high speed microwave Internet connection that can run at up to 10 mb/sec. The VPN is built using hardware devices that support tunneling, encryption and certificates. Authentication is handled by the application. HIPAA will eventually impose a set of rules on security for use of the Internet; the security measures at Manatee meet the requirements of the current proposal.

The Teleradiology services began contributing to the bottom-line immediately. "The turn-around time on the reports from IRG has been excellent. My cost of transcription has gone down. The pressure of recruiting and satisfying radiologists and locum radiologists is gone. We always have just the right number of radiologists to do our work; we are not paying a radiologist when we have had a summer slump. We do not have to pay for the radiologist's vacation," says Dr. Graham.

The next steps are to allow the referring physicians to access their patients' information (and just their patients' information) via the web and to eliminate the production of film unless it is absolutely needed. "When the system first went into use earlier this year, we configured a tape system as a long-term storage device," said Shelly Fisher, from BRIT Systems. "But as the year progressed, it became obvious that for sites under 55,000 exams per year, it is more economical to use RAID for long-term storage. Of course, the RAID is



Dr. C. Sinclair Cottingham of IRG reads exams for Manatee Diagnostic Imaging Center

backed-up to a tape, but that tape can be on a shelf, not in an expensive library." The RAID is less expensive, faster and requires less support (for example, labeling and loading media) than a library.

The security to limit the access of referring physicians to just their patients is a standard part of the web server product. The

referring physician for each exam is determined via an interface, now under development, to the Center's homegrown scheduling package.

This system is made economically viable through the use of the Internet. It provides the inexpensive bandwidth that allows for the transmission of large files, enabling off-site reading services and access to the exam storage for large numbers of users. Use of it can transform a business, it can be done while maintaining patient confidentiality, and there is no fear that it will be shut down like Napster.

For more information, please contact BRIT Systems at 800.230.PACS, or visit their web site at www.brit.com

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