Maximizing Radiologist Productivity

BEST PRACTICES & INNOVATIVE STRATEGIES

UNIVERSITY OF WASHINGTON MEDICAL CENTER
Driving Results in Radiology

One Vision: The Next Step for Radiology Productivity

CLARUS IMAGING
Web-based RIS/PACS/Billing Streamlines Imaging Center Operations

RADNET
Imaging Center Chain Pushes Productivity to the Limit

The Next-generation Image Management Solution

Inside the Digital Dashboard

RUTLAND REGIONAL MEDICAL CENTER
Rural Hospital Embraces IT to Deliver Productive Patient Care

SOUTHWESTERN ONTARIO DIAGNOSTIC IMAGING NETWORK
Access to Imaging Records Bridges the Geographic Divide

Sponsored by an educational grant from GE HEALTHCARE
GE believes in the power of healthcare IT to make a meaningful difference in people’s lives. For our Centricity* Imaging portfolio, that begins with a big idea: one desktop.

We’re committed to building an imaging portfolio that integrates multiple clinical applications accessible via an open, web-based approach. Products like Centricity PACS-IW, Centricity PACS Web Diagnostic (DX) and Centricity RIS-IC already leverage the power and simplicity of the web, driving new efficiencies—and more will follow.

This platform is part of our larger vision for imaging IT: one desktop, one patient, one community. That vision is how GE will make a lasting impact on patients’ lives that’s bigger than IT—and that will make a difference to everyone.

See what we mean at SIIM 2010, booth #521.
The Human Touch

Technology is not a replacement for the human touch, but rather a powerful tool to enable better quality and improve the patient care experience.

Radiology has long deployed effective IT tools—RIS, PACS, voice recognition, 3D, enterprise storage and EMR—but now fiscal, political and demographic pressures are pushing departments, facilities and imaging centers to seamlessly integrate these technologies to maximize productivity and patient outcomes. Other ingredients key to thriving in 2010 are a proactive technology vision and vigorous data mining and reporting.

The epicenter is the radiologist who needs the right information to flow instantly—as one open, unified, web-based view of the patient that includes images, relevant priors and current care data. But the whole operation must work with precision and speed. Ordering protocols must be set, scheduling must be efficient, patients need to move through the department quickly, comfortably and safely, and reports and images must be returned to referring physicians as quickly as possible.

Here you will find example after example of radiology departments and imaging centers whose IT and operational strategies are working harmoniously. They’re tracking key metrics and adjusting to increase productivity and efficiency. They are dissecting workflow, developing new processes and teaching employees to assist the department in reaching their productivity goals. Measure, learn, modify, succeed.

True, quality healthcare is high-tech with a human touch.

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Improving radiologist productivity is a complex, yet essential endeavor. The impetus stems from political, fiscal and demographic pressures. “It’s clear we are going to be providing a greater degree of healthcare to more people. This requires that we not only do a better job, but that we do a bigger job, at the same time,” says William Shuman, MD, medical director and vice chair of radiology at University of Washington Medical Center in Seattle. “We need to use our facilities in a much smarter fashion and with much more powerful levers. The major lever in today’s world is technology.”

Compounding the demographic situation is the U.S. clinical landscape. Physicians must have data at their fingertips to make informed decisions quickly and accurately. One of the key pieces of essential data is imaging results. “Our information is critical [in terms of informing the diagnosis and initiating therapy]. We have to be ahead of the process—not behind it. We need [our systems] to provide productivity and functionality that enable physicians to take care of patients in a very efficient manner,” continues Shuman.

For years, University of Washington Medical Center has pursued optimum productivity. This 450-bed academic medical center, along with its six affiliate hospitals and clinics and 110 radiologists, effectively and strategically deploys technology and processes to squeeze every ounce of efficiency out of its radiology department. Today, this enterprise that performs about half a million radiology exams a year stands as a model of productivity. In fact, according to Gene Hoefling, administrative director of radiology, five years ago, the radiology department at University of Washington Medical Center operated at 214 FTEs. This spring, the center completed 15 to 20 percent more exams with 10 fewer FTEs for a total staff of 204. One of the open secrets to the center’s productivity is a strong technology partnership with GE Healthcare.

Shuman credits a fair share of the center’s success to Centricity RIS/PACS functionality, with Centricity RIS-IC and Centricity PACS. “Over the past few years, functionality has doubled or quadrupled its productivity. But I believe we have another doubling to go.”
RIS-driven workflow
At University of Washington Medical Center, Centricity RIS-IC serves as the brains of the radiology department with providers using RIS for every step of their work right through image review. The department is maximizing metrics, creating charts and graphs for every business activity and using them to dissect workflow, develop new processes and teach employees to help the department reach its productivity goals, says Andy Strickland, director of imaging informatics. Centricity RIS-IC serves as a dashboard for the department, providing a real-time searchable database that tracks everything from patient movement to cash flow to production per modality. "It greatly empowers our ability to manage the business, our productivity and our impact on patients," says Shuman.

The primary goal for the radiology department is simple: get patients into the department quickly, comfortably and safely; image them as fast as possible, and return results to the referring physician as quickly as possible. Its efforts have paid off with improvements of 25 percent in report turnaround time thanks to RIS-driven workflow, says Strickland.

RIS/PACS has delivered a number of improvements at the facility. Radiologists have access to everything they need via the RIS—prior results, referring provider contact information, medications and order details, says Strickland. Centricity also directs radiologists to the studies that need to be read.

Reading re-design
University of Washington Medical Center further optimized its technology by re-designing its department to support the new, ultra efficient workflow. The new decentralized model relocated radiologists to new reading rooms carefully designed to help them focus on image interpretation and reporting. Rooms are equipped with flat-panel displays to show exams direct from the MR and CT operator consoles across their campus, providing radiologists with the visual data needed to troubleshoot problems with technologists during the exam—without leaving their workstations. Workstations incorporate a third monitor to display RIS or EMR data and 3D images. Motorized desktops and ergonomic chairs minimize discomfort and help radiologists concentrate on the task at hand.

The other half of the decentralization equation is centers of excellence. Consolidating the "sub-specialty brain trust" with supporting technologists, appropriate technology and space optimizes productivity, Strickland says.

Peering into a more productive future
The writing is on the wall. Radiology has not yet reached maximum capacity. One cutting edge solution under the microscope is GE Centricity Precision Reporting. Precision Reporting is a next-generation voice recognition solution that better adapts to various user needs and clinical situations leveraging natural language processing from M*Modal, GE's partner in providing advanced speech understanding technology. A few months into the deployment, Precision Reporting, which is tightly integrated with Centricity RIS-IC, has enabled a much more flexible, efficient reporting model. For example, it pulls data directly from RIS-IC to pre-populate templates with contrast used, protocols, clinical history and more. Customized, templated text for straightforward results such as a normal chest x-ray further boost productivity.

The major differentiator with Precision Reporting, however, is its flexibility. A radiologist might choose to record his results and send the exam to medical transcription for editing. In other cases, the radiologist might interact with the system in self-edit mode, to view and fix and sign the report, Strickland notes. Some providers like to fill in the blanks in highly templated reports, while others prefer to speak naturally, in paragraphs with no templated text.

Toward maximum productivity
Achieving maximum productivity among radiologists is a constant process that requires enterprises to juggle multiple inputs. In 2010 and beyond, these include technology and processes. The department must plan each step and analyze its impacts. A robust workflow image and information system portfolio the likes of Centricity provides a solid platform that not only provides features and functionality to maximize productivity, but also allows progressive healthcare enterprises to dissect processes to further improve productivity.
The radiology IT community has a lot to be proud of. A number of recent studies have shown that radiologist productivity has nearly doubled, as measured by RVUs, in the last decade due primarily to the adoption of PACS. This has been a remarkable accomplishment and is an enduring lesson for the rest of the healthcare IT community.

However, the trends that demanded that productivity increase will persist into the next decade—namely, increased demand for imaging, increased complexity of imaging studies, decreasing reimbursement per exam, and a shortage or fixed supply of radiologists. So again, we must enable the doubling of radiologist productivity to keep ahead of these trends. But we have already played the PACS “trick.” How can we double again?

I believe there are three main areas of initiatives that can enable this next significant leap in productivity. They are:

- **One Desktop**—Bringing together all of the tools that a radiologist needs into a single, unified desktop.
- **One Patient**—Consolidating and presenting a unified view of the patient’s chart—all images, all reports, and relevant clinical data across organizations and “ologies.”
- **One Community**—Providing a seamless workflow that brings the community together to serve patients quickly, with the highest quality.

A vision of One Desktop, One Patient, One Community brings together the information, workflow, and tools to allow radiologists to continue to practice high-quality healthcare with speed and precision. IT solutions are the enablers of this vision.

One Desktop means that the tools the radiologist needs—RIS, PACS, voice recognition, enterprise storage, 3D and EMR—are seamlessly integrated together. It means that the radiologist isn’t logging in multiple times, or re-identifying the patient, or dictating information the system already knows, or forwarding the images to multiple places in the background to get this to work. It also means that the vendor’s product must be open to enable departments to plug in applications from other vendors or homegrown applications, seamlessly into the desktop. And it must be web-based, so that this streamlined desktop can be wherever the radiologist happens to be—at the hospital, at home, at an imaging center, across town, or across the world.

One Patient means that the radiologist sees the “whole” patient. It may mean a community of hospitals and imaging centers virtually assemble a single patient jacket that consolidates images and reports across institutions and medical record numbers. Apple iTunes has single-handedly nearly eliminated music CDs; it’s certainly time for image exchange and single patient jacket type offerings to put an end to the DICOM CD. One Patient also means full digitization of a patient’s images across a hospital—certainly radiology and cardiology, but soon digital pathology, visible light images, endoscopy movie files, all stored in a multi-purpose archive and effectively plugged into the hospital’s EMR.

And the third area of focus, One Community provides workflow tools to bring the healthcare community together. From the moment a physician even thinks about ordering an exam, the decision support that informs that order, the scheduling, the protocolling, the actual exam, the reporting system that effectively and quickly captures the radiologist’s diagnosis in text and discrete quality data using Natural Language Processing, and the channeling of the report, images, and any discrete results back into the originating physician’s EMR. Community workflow must bring radiologists together as well. With sophisticated dynamic workload allocation, radiologists can form a virtual department that can read for many hospitals using sophisticated rules around turn-around time commitments, workload mix, specialty and credentials. And lastly, visual management tools, dashboards and metrics give managers real-time feedback into their operations as they are happening. As equipment, radiologists, work queues and EDs get backed up, decisions can be made on the fly to realign the workflow to keep patient care expedient and everyone and everything functioning at its best.

The One Desktop, One Patient, One Community vision brings together many technologies that already exist, but also many that have yet to become mainstream. I am convinced that effectively delivering in these areas will give us the doubling again in productivity that the radiology community really needs, and is depending on, to stay ahead of the constant demands of imaging.
Clarus Imaging—a small imaging center provider with two sites in Houston and Beaumont, Texas—needed a more streamlined system for handling its exam scheduling, reporting, billing, and most importantly, its imaging data. For this group that completes 12,000 exams each year and has plans in the works to add two more centers, gaining control of essential data was mission critical.

GE Healthcare’s Centricity RIS/PACS-IW is the solid solution Clarus chose to become more competitive in its marketplace, namely by meeting the needs of referring physicians with quicker report turnaround times (24 hours vs. 48 hours prior to RIS/PACS), eliminating the need to outsource billing, billing more effectively and providing radiologists with all previous imaging studies and reports.

The integration of RIS and PACS was a key differentiator in selecting the system, says PACS Administrator Rebecca Bridwell. The system “provides a more streamlined process for us from scheduling to registering the patient to the delivery of reports,” she notes, leveraging the product as “one-stop shopping for radiologists.” Currently, the clinic has 10 to 15 radiologists who are independently contracted to read exams, all of whom are located offsite. This is a large increase from the three radiologists they had prior to PACS.

Referring physicians appreciate the RIS/PACS remote viewing capabilities. “They can see the images and reports from the comfort of their office, without the need to contact the facility in the event of a lost report,” Bridwell says. And the facility has leveraged this remote access feature as a marketing tool for prospective referring physicians.

Clarus has attracted quite a few referring physicians due to the remote capabilities of RIS/PACS, notes Bridwell. In addition to referring physicians, Clarus employees enjoy the flexibility the solution offers. “The radiologists access and read images remotely [as they are located offsite], resulting in a really great working environment for them [radiologists],” she explains. “Our turnaround time has really improved because before we were sending our images to the PACS stations at the radiologists’ personal PACS at their homes. Now with a web-based system, they are able to access images on the fly any time they have internet access, which has really improved their workflow.”

The radiologists also have been impressed by the convenience of a paperless workflow, which makes all outside documentation associated with the patient available at their fingertips. Patient documentation is scanned in, as opposed to faxing paperwork to the reading radiologist, notes Bridwell. “They no longer have to keep up with paper files because everything is digital and right there for them, and it’s really improved their workflow.”

Clarus is taking full advantage of the billing module, which allows them to handle billing internally rather than outsourcing it. The Centricity RIS/PACS-IW, which comes preloaded with CPT codes, has helped the imaging center reduce the time required for both coding exams and scrubbing bills by 50 percent. This has clearly resulted in better cash flow and a more efficient business office.

RIS/PACS-IW is a scalable solution which is key to Clarus’ growth plan. The group plans to open a third facility by the end of the year. A fourth site is set to open in 2011. With the help of the Centricity RIS/PACS-IW, Bridwell predicts that the facilities’ expansion in terms of both clinical capabilities and business operations will be smooth. “We will be able to expand on what we’ve already installed at our two main facilities, which are working great. I think it will be a pretty easy expansion,” she says. “We were able to eliminate a lot of extraneous information when we went to this system and we can easily move patients around on the schedule, which has proven to be an asset as far as time management is concerned. Everyone is on the same page.”

By Gina Narcisi
Achieving optimum productivity is mission critical at RadNet. They strive to make sure information flows at just the right rate so the most precious resource, the radiologist, is not idle for even one second. To that end, the business partners with GE Healthcare to deploy, leverage and optimize IT to squeeze every drop of productivity from its technology and staff resources. RadNet pursues its core strategy with a razor-sharp focus. “We have established metrics across the board in all disciplines... [to help us define] repeatable processes that give us a good predictable outcome,” explains Executive Vice President and Chief Operating Officer – Eastern Operations Steve Forthuber. Its dashboards are comprehensive, addressing the patient, payor and provider. The end results are impressive. RadNet epitomizes outpatient imaging efficiency, which is essential for thriving in today’s market.

Customized and replicable
As a large business with hundreds of imaging centers, RadNet aims to duplicate successful processes across operations. At the same time, the company differentiates itself by offering outstanding quality and service. They are a local business operating on a national scale. Juggling local needs with proven efficiencies requires a delicate balance. “The most important and successful strategy is service, service, service. This has taken on a different meaning as we adopt technologies that allow us to create better service models and achieve a competitive advantage,” explains President and CEO Howard G. Berger, MD.

Consequently, RadNet practices replicability with a customer service twist trying to make business as easy as possible for referring physicians. The company mines IT data to enable referring physicians to receive results according to their preferences: in the EMR,
RadNet’s approach to radiologists’ workflow is similar. Every element of the business is deployed, analyzed and managed to support image review and reporting and make them as convenient and efficient as possible. The company employs GE Centricity PACS-IW and Centricity RIS-IC as its image and information management solution (for PACS and RIS), and has leveraged its customization capabilities to improve radiologist workflow. “We partner with radiologists and ask them how we can design Centricity PACS-IW to support maximum workflow,” explains Timothy D. Swingler, Jr., director of IT, Operations, Eastern Operations. The IT group shares information about what works in its various markets and focuses on optimizing systems and processes to meet each local radiology group’s needs. For example, RadNet uses Centricity PACS-IW to enhance productivity by delivering cases to local radiologists based on various elements such as specialty, caseload and preferences.

**Overcoming challenges**

Berger identifies the three primary challenges to radiologists’ productivity: transcription, image presentation and post-processing. If a practice can implement systems, practices and strategies that improve radiologists’ productivity by even 5 percent, he says, it also can impact the center’s overall profitability.

On the interpretation side, subspecialization and replicability across radiologists are somewhat at odds with each other. Images need to be presented in the configuration that supports maximum productivity of each radiologist’s skill set and reading preferences. Despite massive IT infrastructure, and the vast majority of studies accessed at the proper location, this remains a manual process with an assistant or radiologist pushing and pulling images for a small, yet important percentage of studies when looking at it through a productivity lens. “It needs to be automated with artificial intelligence that recognizes the radiologist at the workstation and presents a worklist customized to his or her needs,” Berger says. This system should push the right studies in the right presentation to the right radiologist across the system.

Neuroradiologist Peter Vandermeer, MD, at Advanced Radiology, a RadNet site in Baltimore, identifies a related challenge. “Images come to you from a single scanner, but the back story [about patient history and prior images] may come to you from all sorts of different locations. Similarly, the information needs to go to a lot of different people. A report may be cc’d to six different people.” Ideally, in the ultra-competitive outpatient imaging center world, each radiologist and recipient is presented with exactly the information he or she needs, in the format he or she prefers.

A final challenge originates on the post-processing front. The post-processing world overflows with an array of niche solutions for various applications. Many radiologists require multiple systems for daily work, but can’t log onto PACS to immediately and collectively access essential processes or applications.

**The dashboard impact**

IT is universal among imaging centers. PACS and RIS penetration stands near 100 percent. “[Optimum productivity] isn’t as simple as saying here is a RIS package that we are going to acquire; the key part is operationalizing IT with IT and operations working together to define the end results needed [and a roadmap to the results],” says Forthuber. At RadNet, this is a minute-by-minute process driven by a host of dashboards.

In fact, RadNet operates as dashboard superusers. The company develops and implements dashboards for nearly every business process from report turnaround times to image distribution to server monitoring.

In the last several years, the company has seen results from its commitment to dashboards. One of the early success stories is its call centers. When the company first measured its call abandonment rate, it stood in the high teens and it took over a minute to reach a person. After measuring the problem, the company worked with team members to develop and implement best practices. Now the call abandonment rate is close to zero, and it takes less than eight seconds to get a person on the phone.

**Integration matters**

Another ticket to profitability in the current environment is fully integrated IT. Berger pinpoints a key challenge. “We continue to see too many independent vendors with products that lead to loss of productivity for the radiologist, either because they don’t get integrated into the existing PACS or RIS, or require a different solution for almost every type of application.” The result is not only decreased productivity, but also prohibitive acquisition costs. On the front end, information needs to be acquired, distributed and stored seamlessly. To help address these issues, businesses like RadNet need vendor partners who respond to help them manage integration issues.

Director of Clinical Applications Mike Backof uses a multi-pronged approach that includes open source tools, internal development and vendor partnerships. “Combining strategies and partnering with GE allows us to more tightly integrate disparate systems and provide a solution for radiologists and techs,” he says.

**The continued quest**

Imaging centers have made tremendous strides in productivity in the last decade; however, they have not yet reached their full potential. The current fiscal and demographic situation demands another leap in productivity. The coming leap will resemble the RadNet model and glean productivity from multiple sources: well-defined and smoothly deployed dashboards, robust integration and strong vendor partnerships.
As healthcare enterprises go through the process of achieving meaningful use, the term “healthcare interoperability” over the last several years has taken on more of an urgent tone.

Consequently, GE Healthcare has developed a vision of imaging and data exchange encompassing solutions and services that facilitate reporting workflow and the distribution of images and clinical information across enterprises or even regions. These imaging and data exchange solutions are designed to seamlessly connect healthcare providers—across enterprises—while at the same time keeping patients at the center of all services.

Within its new (4.0) version of Centricity Enterprise Archive, GE Healthcare has taken another step towards providing a standards-based, non-proprietary solution in support of healthcare interoperability.

Centricity Enterprise Archive is a data-center class IT infrastructure that provides a single, scalable architecture to maintain image and report content across departments such as radiology, cardiology, oncology and those that produce visible light objects, along with powerful web-based viewer technology to image enable the EMR, providing a true single point of access to clinicians.

Consolidating data from different departments into a single reliable system eliminates islands of information, reduces IT overhead, and facilitates compliance with retention and disaster recovery requirements.

Within hospital or across regional networks, health information exchange happens on an IHE XDS/XDSi infrastructure, enhancing a decisive step into eHealth, where clinical collaboration is significantly improved and information is at the center of care.

“Enterprise Archive 4.0 simplifies the archiving of "multi-ology" images, results and related information, delivering a PACS-neutral, universal repository,” says Don Woodlock, vice president and general manager for imaging solutions, GE Healthcare, who adds that “the unified, standards-based architecture, combined with support for XDS/XDSi and an intuitive, web-based viewer, helps enable healthcare organizations to realize their visions for healthcare interoperability.”

Centricity Enterprise Archive provides a comprehensive technical platform tailored to meet the needs of IT professionals and support the following market uses:

➤ **Image exchange across multi-vendor DICOM archives:** Supports DICOM, HL7 and IHE XDS/XDSi standards and is an ideal regional archiving solution in a multi-site environment. Integrates with IHE PIX to resolve multiple patient identifiers. Protects previous investment in other vendor’s PACS solutions as EA’s “eBroadview” Query Spanning technology pulls data out of legacy DICOM archives and displays them in the viewer without data migration.

➤ **Enterprise Archive:** Standards-based, scalable infrastructure stores DICOM and non-DICOM data across departments such as radiology and cardiology, providing a single infrastructure for enterprise-wide storage and access.

➤ **PACS Neutral Archive:** Standards-based platform for providing enterprise-class storage and access as well as integration into an HIE.

➤ **Image Lifecycle Management (ILM):** This tool is critically important to manage the large volumes of DICOM data created over time from image generating departments like radiology (CT/MR/CR). ILM is based on a set of rules that allows you to move, compress and delete images when you want them and where you want them. Not only is it particularly effective at managing the retention policies at your site, but also at migrating your data across different virtual and physical archives.

“Although EA 4.0 is a new release, it’s an evolution of the same technology stack that currently supports more than 550 million exams, representing more than 27 billion images across the globe,” says Woodlock. “Centricity Enterprise Archive is a core component of each of our Centricity PACS implementations worldwide, allowing for the immediate realization of a PACS-neutral archive and providing the foundation to expand to an enterprise archive or health image exchange without data migration, providing immediate results towards the goal of healthcare interoperability.”
Digital dashboards use data-mining techniques to continuously, automatically process and visually display custom-set performance indicators that provide operational data for practices, departments or facilities. As imaging operations are being strained to transition from a cost center to a profit center, a business analytics tool such as a digital dashboard is needed to allow radiologists and administrators to drill down into their practice to find efficiency and inefficiency.

“We know that our workflow is not perfectly optimized so the question is ‘How do we optimize information based on patients’ needs and care?’” says In Mun, MD, vice president of research and technology at Hospital Corporation of America (HCA) North Florida Division in Tallahassee. “We focus on business analytics because we want information that is correct and unbiased to make a decision.”

Providing a graphic representation of a practice’s operations, dashboards that provide role-based presentation of mined data allow clinicians and administrators to understand their practice quickly, succinctly and improve operations with faster and more complete service to the referring physician.

At the end of the day, business intelligence and the use of digital dashboards will mean different things to many people with a variety of goals. Mun sees digital dashboards being customized for the diverse roles in a radiology practice. A technologist could use real-time functionalities to know how long patients are waiting for exams, while radiology directors could benefit from looking at the dashboard’s trending capabilities—all in real time.

“In CT [for example], if more inpatients come in the morning, we would know not to schedule outpatients in the morning,” says Mun. “However, outpatients pay better, so a radiology director would be able to balance the scheduling using a dashboard to allow for more outpatients without negatively affecting inpatients.”

Regardless of how you value your metrics, the greatest benefit to digital dashboards will be the potential to improve radiology workflow while looking at an end-to-end process. Aggregating RIS, PACS and other systems’ data and funneling them into discernable, digestible metrics, however defined, will eventually result in improved physician and customer satisfaction. “With business analytics, we would be able to manage patients faster and know how long they’ve been in the waiting room so we could control throughput better leading to happier patients,” says Mun.

Eliminating the human factor and harnessing the power of a dashboard to aggregate data and automate the output allows the practice to be monitored continuously and evaluated. With continuous data from end-to-end, workflow processes lacking in efficiency can be retrofit to perform better before a problem gets ingrained in the organizational culture.

“We are looking for ways to improve processes, but we want to use independent information because a human observer is subjective. Subjective information is not always accurate and when we use that info, it’s difficult to change workflows,” says Mun. “What is most important for us is to collect information that is accurately reflecting what we do.”

Digital dashboard solutions are not currently widespread, but that does not mean that business intelligence benefits are far off. “As healthcare reforms, government is asking for more and more data and at some point, you’re not going to be able to do it manually and the government will wise up and ask for more automated processes,” says Mun. “A digital dashboard will be a crucial piece of technology everybody will need to deploy down the road.”
Rural Hospital Embraces IT to Deliver Productive Patient Care

Rutland Regional Medical Center, in Vermont, is a 188-bed rural hospital that effectively weds high-tech imaging with patient-centric care. Its radiology department offers comprehensive imaging including CT, PET, MRI, nuclear medicine, digital mammography and ultrasound and completes 79,000 studies annually. “We like to say we are high-tech with a hometown touch,” explains Staff Radiologist J.C. Biebuyck, MD. The center is sandwiched between several tertiary medical centers, but all are at least 70 miles away. It keeps patients close to home, which, in turn, improves the medical center’s bottom line.

This model requires smart use of IT. It’s critical to get information into providers’ hands, says Vice President of Clinical Services Barbara Robinson. Rutland Regional identified imaging and information dissemination as core competencies and has organized investments and resources to support efficient distribution. Two years ago, the medical center deployed its first PACS—GE Healthcare Centricity PACS combined with a web-based RIS, Centricity RIS-IC. Recently, it added Centricity Precision Reporting for automated diagnostic reporting to become a filmless, paperless radiology department.

A new model
Rutland Regional Medical Center’s commitment to IT has transformed its radiology department; the center has developed an efficient workflow that prioritizes referring physician communication and patient care. “Imaging is at the foundation of most medical decision-making, [and] radiologists are much more involved with patients,” says Biebuyck. “This has increased our awareness of service to the referring physicians and patients. We need to interact more with physicians and patients.”

Interaction, however, is a double-edged sword. Specifically, radiologists face more interruptions than they did five or 10 years ago. If they aren’t well-managed, these interruptions can slow workflow.

The medical center circumvented negative workflow impacts by combining Centricity PACS and Centricity RIS-IC with solid workflow practices. The end result is a productivity leap despite the increased demands on radiologists to read more studies, with more images per exam.

To gain efficiency the radiology department beefed up human
As it deploys new imaging and IT systems, Rutland Regional Medical Center configures solutions to meet workflow needs, and continually monitors metrics to drive additional gains. “Centricity RIS-IC, Centricity PACS and Precision Reporting allow us to dive into every little component of radiology workflow and understand it to make improvements,” explains Robinson.

The center tracks metrics such as report turnaround time and scanner utilization. Centricity RIS-IC has helped the facility better manage scanner availability among various needs: inpatient, scheduled outpatient and emergency room patient. As a small community hospital, Rutland Regional relies on one CT and one MR scanner, so efficient use is a top priority. The center used Centricity RIS-IC data to determine which processes slowed workflow. After analyzing the data, the hospital set up a staging area to prep patients and organized a direct scanner-to-PACS connection to accelerate image review by radiologists.

**Enterprise productivity and service**

With imaging at the center of medical decision-making, investments in the department have a positive ripple effect throughout the enterprise. Consider for example the emergency room. Prior to deploying the Centricity portfolio, Rutland Regional Medical Center relied on a paper-driven, wet-read process for stat studies. With Precision Reporting, a radiologist dictates, edits and signs stat exams within minutes of reviewing the images. Physicians in the ER receive final reports very quickly and don’t have to worry that results may differ from the wet read. The IT-driven process improves clinical efficiency and patient care.

“The faster we can render the interpretation, the better the patient is,” notes Biebuyck. Consider the patient who presents to the ER with a suspected intracranial hemorrhage. As soon as the radiologist diagnoses the hemorrhage, the center calls a helicopter to transfer the patient to a tertiary hospital.

**Pushing productivity**

Achieving optimum productivity hinges on organized IT resources. As it deploys new imaging and IT systems, Rutland Regional Medical Center configures solutions to meet workflow needs, and continually monitors metrics to drive additional gains. “Centricity RIS-IC, Centricity PACS and Precision Reporting allow us to dive into every little component of radiology workflow and understand it to make improvements,” explains Robinson.

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**The importance of integration**

Integrated IT is the cornerstone of the highly productive radiology department. It eliminates problematic interfaces and uses direct database connections to deliver improved productivity and patient care. For example, Precision Reporting and Centricity RIS-IC share the same database. “It decreased our errors to zero and improved results reporting time,” explains Biebuyck. “It has increased my ability to look at images rather than worrying about paperwork. It has completely decreased my distractions as a radiologist. I feel like I am a better radiologist because of it.”

**High-tech, high-touch design**

By investing in a tightly integrated Centricity portfolio of systems, Rutland Regional Medical Center leveraged IT to re-invent its radiology department. This rural community hospital offers a progressive care environment, efficiently serving patients and physicians to ensure high-quality care close to home.

**IT: The Clinician Impact**

Maximizing productivity in the radiology department is a top priority and a key driver for IT investments. Other clinical stakeholders, however, also realize significant results when a facility commits to leading edge IT. Take for example Richard Lovett, MD, a radiation oncologist at Rutland Regional Medical Center.

The medical center’s investment in GE Healthcare’s Centricity portfolio has enabled the radiation oncology team to re-invent patient care. Prior to PACS, Lovett says tumor boards entailed shuffling file folders stuffed with films and crowding around lightboxes. Today, the team projects images from PACS onto a large screen. “It has truly revolutionized the way we manage patients. We look at data anew and discuss findings and treatments. It gives the patient the best care because all of the physicians are looking at data together,” explains Lovett.

Centricity also helps Lovett better manage critical results. With RIS/PACS, he reviews the images and report and shares results with patients, often minutes after a scan is completed, conveniently on rounds with his laptop, instead of phoning them several days after the radiology study. The new capabilities keep patients who might have had to seek treatment elsewhere in the area.

The upshot? The rural hospital and its community reap enterprise benefits from smart IT investments.
**SOUTHWESTERN ONTARIO DIAGNOSTIC IMAGING NETWORK**

**ACCESS TO IMAGING RECORDS**

Bridges the Geographic Divide

To accomplish their goal of an all-expansive, pan-Canadian EHR, the Southwestern Ontario Diagnostic Imaging Network (SWODIN) is facilitating electronic access to patient records and images in hospitals and medical facilities throughout the region of Southwestern Ontario.

The 56 hospitals in the geographic area have instant access to patient imaging records via GE Centricity OneView, a web-based clinical information and workflow management engine that connects multiple facility’s disparate RIS/PACS via a single web-based solution, regardless of the originating source of the data. OneView collects and cross references medical record numbers and corresponding clinical data for a patient, serving as a “single patient jacket.” These data are used to drive enterprise clinical imaging workflow by providing radiologist worklists, seamless PACS integration and report and image management capabilities across Southwestern Ontario. Its centralized data repository, which includes approximately 1 million patient records, is shared by radiologists, specialists and referring physicians.

Starting as a pilot program linking eight facilities, SWODIN now spans 56 hospitals, has 575 active users (and growing) and allows the sharing of 60 million patient images almost instantly across hospitals in the province—spanning north to south from Tobermory to Windsor.

Using the Enterprise Archive (or centralized archive) for data storage, OneView aids in the streamlining of workflow and expansion of information over a broad area, thus creating enhanced accessibility.

**X-ray vision into patient data**

The London Health Sciences Centre (LHSC) and St. Joseph’s Health Care in London, two academic providers in Southwestern Ontario that together complete nearly 500,000 imaging studies per year, implemented Centricity OneView three years ago to streamline workflow and expand its patient base.

Because the academic referral base at London is sprawling, one of the major advantages of OneView is its ability to allow visibility to patient images that have been performed anywhere within the Southwestern Ontario network, says Richard Rankin, MD, a radiologist at LHSC.

When the facility first made the switch from a film-and-paper based system to PACS, Rankin says there was a 7 percent drop in the number of repeat imaging studies performed at each of the surrounding hospitals. Because OneView covers an even larger portion of the geography, Rankin says that these numbers, although not official, have most likely dipped even lower. Most impressive was the 30 percent boost in radiologist productivity that OneView enabled.

The large database capabilities combined with the integrated services of the RIS/PACS makes the consultation process easier and more valuable with OneView, and also allows exams to be better tailored to patient needs. “Some patients move around for one reason or another, sometimes because they are referred to a particular doctor and some for reasons outside of healthcare. The fact that their imaging studies are available wherever they are and to whoever needs them is extremely important,” says Rankin.

OneView is just one of the pillars to success at LHSC and St. Joseph’s, helping to streamline workflow, optimize patient care, provide direct entry to patient records and improve the patient referral system.

Prior to OneView, digital imaging exams were placed on a CD-ROM or x-ray film and mailed to physicians—a very time-consuming and delaying process, says Richard I. Inculet, MD, chief of the Division of Thoracic Surgery at LHSC.

With the help of OneView, this cumbersome process is alleviated, as is the need for repeat patient exams, which has led to a reduction of radiation exposure, wasted time and cost, and better patient care.

The solution also allows quick access to relevant priors. “I can look at an x-ray immediately from a facility that is three hours away by car. This makes things very efficient because I can make a decision that’s appropriate right then and there,” says Inculet.

The expansiveness of OneView decreases patient drive times and waiting room times and can allow physicians to diagnose patients more quickly, enhancing patient throughput and yielding better outcomes. It makes sense for patients, while establishing a cost-savings strategy via wide-area RIS and PACS connectivity without the capital cost of replacing technology.

“This is ideal for a major tertiary center that is responsible for patient care referrals from multiple community hospitals,” concludes Inculet.
Our vision revolves around one patient.

GE believes in the power of healthcare IT to make a meaningful difference in people’s lives. For our Centricity* Imaging portfolio, that centers around an important focal point: one patient.

We’re committed to solutions that aggregate a patient’s clinical information into a single jacket, giving radiologists and clinicians a more comprehensive view—and a more efficient workflow. Products like Centricity OneView Single Patient Jacket and Centricity Enterprise Archive 4.0 are already delivering on this promise—and others will follow.

A one-patient approach is at the heart of our larger vision for imaging IT: one desktop, one patient, one community. That vision is how GE will make a lasting impact on patients’ lives that’s bigger than IT—and that will make a difference to everyone.

See what we mean at SIIM 2010, booth #521.
GE believes in the power of healthcare IT to make a meaningful difference in people’s lives. For our Centricity* Imaging portfolio, that leads toward a bold goal: one community. We’re committed to connecting local and remote imaging workflow seamlessly to all clinical stakeholders. This unified community will help radiologists deliver faster, higher quality imaging results to the desktop, to the EMR and beyond. Such offerings as Centricity OneView Global Reading and Centricity Enterprise Archive 4.0 are already fulfilling this promise—and more are on the way.

A single community is the end result of our larger vision for imaging IT: one desktop, one patient, one community. That vision is how GE will make a lasting impact on patients’ lives that’s bigger than IT—and that will make a difference to everyone.

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