A family doctor for more than 20 years, Dr. Michelle Greiver knew there was a better way to manage patient care than using walls of cabinets stuffed with files. Government support of the move to Electronic Medical Records (EMR) let Dr. Greiver shred her paper and adopt wireless technology, enabling greater access to the information she needed to improve patient care.

As a doctor in a small community-based practice in Toronto’s North York region, Dr. Michelle Greiver has watched Europeans adopt new technologies to improve patient care. She knew that paper-based files were inefficient, cumbersome and didn’t allow her to proactively manage her practice. She knew that the solution was technology.

“I’ve wanted to do electronic records for a long time,” says Dr. Greiver. “I hate paper. It’s inefficient and terrible for following my whole practice, as well as the status of larger groups of patients. How can I see how my diabetics are doing if all their records are in separate files? I knew that the key to improved care would be electronic medical records so we can more effectively track, share and manage patient care. It’s something you just can’t do with paper files.”

The challenge to overcome was cost. Implementing a new system at a two-person medical practice where only one of the practitioners was interested in the new technology was cost prohibitive.

Primary care health reform in Ontario turned out to be good news for Dr. Greiver’s dream of an electronic records system, but it required a leap of faith. The government encouraged doctors to work together as part of a Family Health Network (FHN) to improve patient care and established a funding model to subsidize the adoption of Electronic Medical Records (EMR).
“I knew that the key to improved care would be electronic medical records so we can more effectively track, share and manage patient care. It’s something you just can’t do with paper files,” says Dr. Michelle Greiver.

Dr. Greiver’s practice and her FHN of nine doctors started to analyze the options and build an implementation plan. It was a plan that not only required new software and desktop level access to patient records, but also the creation of a networked server environment with the security and backup capabilities needed to protect confidential patient files.

**Solution**

The government subsidy was applicable for 18 approved EMR software choices. Dr. Greiver’s FHN was entering uncharted territory as few people were using the approved programs in this new field. The group ultimately decided on mynightingale® software, a high-security, Internet-based software package for medical practice and clinical management.

“There were few people using any software application at the time so we picked the one that seemed to fit all our needs,” recalls Dr. Greiver. With Nightingale®, doctors and their assistants can access real-time, browser-based solutions for medical practices. Most importantly, Nightingale has solid support for its implementation.

When looking for a server environment to host the solution, the doctors approached North York General Hospital. With an existing network infrastructure and expert management, the hospital agreed to host the EMR servers and provide additional support with implementation, security, backups and some troubleshooting.

“This was a great opportunity for us to build relationships with our physicians,” says Gerry Dimnik, director of information technology at North York General Hospital. He worked with the doctors and the staff at Nightingale® to build an environment that would work efficiently.

“We wanted to show leadership in this area by supporting the physicians. We know the importance of primary care in our health system. With this initiative we can take positive steps towards improving the continuum of care by making hospital information available to our physicians, with proper security, when it’s needed,” he says.

At the Microsoft® Windows server level, Dimnik always selects Intel®. “In health care, everything just has to work and we know that vendors and suppliers work closely with Intel. For us, that means the systems work every time.”

Next the group focused on the desktop. After reviewing all the alternatives, Dr. Greiver selected a Lenovo® Tablet PC with Intel® Centrino® processor technology. Not only was the tablet easier to take notes on, but with the moveable screen, she could show patients their test results and work cooperatively with them on care strategies. In addition, the Tablet was light enough that carrying it on her rounds was effortless.

An added benefit for Dr. Greiver was security. Since the computer was never left in a patient room unattended, there wasn’t a need for the additional security needed with desktop computers that would be located in unsupervised treatment rooms.

**Key Advantages**

Dr. Greiver has sold her filing cabinets and shredded the paper files that used to fill her offices. This was a major milestone in the implementation of the Nightingale® system, although the benefits go beyond additional space in the office. She is finding that her practice is more efficient and effective. She can be more proactive in managing the health of her patients and her staff has moved from the pure administration of sorting and filing records to becoming practice assistants.
"My staff have become practice assistants, calling patients for follow ups and checking blood pressure or weight. They are more part of the team and doing work that is more valuable to me," she says.

Paper No More
With all the information about patients integrated into Nightingale®, Dr. Greiver’s staff no longer pulls charts, files test results or re-files charts after each appointment in over-crowded filing cabinets.

The amount of paper in a family practice is huge. Dr. Greiver even limits the amount of paper being brought into the office by pharmaceutical sales representatives. If a document is valuable, she scans it, and then shreds it.

"I continue to be amazed at the satisfaction I am getting from getting rid of paper. My consultation room is uncluttered, my exam rooms are much neater and I am using less space," she says. Accessibility of information is much faster electronically than in the old paper system, and without all the paper around, she says "I feel more green."

"My staff was commenting on how efficient we have become. There was a call from a specialist’s office, as they needed copies of some Diagnostic Imaging reports for one of my patients. It took her under 30 seconds to load the chart, locate the reports, and send them over, all without leaving her desk," Dr. Greiver explains.

Reporting Eases Management & Emergencies
Paper-based systems also limited Dr. Greiver's ability to manage her practice. When dealing with files, she couldn't pull numbers or capture data for her practice easily.

Today, she can power up her Lenovo® Tablet PC with Intel Centrino processor technology and instantly see lists of patients who need flu shots so that she can send out reminder letters, or compare clinical results on patients with specific conditions.

"The ability to look at this data is vital to quality improvement. You can't improve what you can’t measure," she says.

Recently, the ease of electronic charts helped alert patients of a drug recall. Dr. Greiver quickly pulled a report of all patients on that drug and was able to react more quickly than she ever could have using the old paper-based system.

Patient Care Un-tethered
With a wireless network in her office, Dr. Greiver walks from room to room with her Lenovo® Tablet PC. Staff alert her through the Nightingale® system that a patient has arrived and before entering the room, she sees alerts, pre-programmed follow-up notes, and she clicks on the cumulative patient profile that outlines everything about that individual.

When she meets with a patient, Dr. Greiver can have a more interactive session, rather than having her head down reading handwritten notes in a chart. She turns the screen towards the patient to share test results and talk about care options. In addition, Dr. Greiver can enter the treatment plan on the spot and patients can see what is being written.

"Patients are very appreciative and it gives us an opportunity to do more education and take a cooperative approach to care," she says, adding that she prints copies of results and educational information about specific conditions while in the treatment room from her Tablet PC. She also gives every patient a print-out of their profile, along with any other relevant educational handouts. Everything is recorded back to the EMR so Dr. Greiver knows what she has shared with the patient.

"It improves the quality of care and reduces errors," she says. "I can see right on the screen what medications are being taken, potential interactions and provide more options for the management of conditions."

Dr. Greiver has a structured preventative health exam with her patients that covers all the bases and uses her EMR checklist as a guide. She notes that a recent research paper said it would take doctors seven hours to get through the preventative interventions that she can cover in one half hour appointment.

While the patient is dressing, she sends lab requests electronically to the front desk and notes any blood work needed. A pop-up message is then sent to the practice assistants noting any required follow-up appointments that the patient needs to schedule before leaving.

"It is so much more efficient, and we get more done during a single appointment," she explains.

Remote Medical Care Made Possible
In addition to the in-office benefits, Dr. Greiver is seeing practice enhancements from home. She is out of the office every Friday doing research and now, being out of the office doesn’t mean being out of touch.

Blood pressure tests can be entered by staff at the office, lab results are filed electronically and she is alerted to any abnormal findings.

Additionally, she was recently able to collaborate on the phone with a specialist who called about a complex patient file by simply pulling up that record using her wireless network at home, which is connected to a secure VPN. Instantly, she had all the data and results at her fingertips to effectively collaborate with her colleague.

"Since the functions that I use no longer reside inside my machine, I can access everything I need to support my patients whether I’m in the office or not."

A recent vacation was also more manageable. Since lab results often come in on Saturday, Dr. Greiver reviewed 12 labs over the weekend before leaving and occasionally logged in to the network using a local wireless hot spot and her Tablet PC with Intel Centrino processor technology for quick Internet access.

"I don’t mind checking in every few days and it means that my partner only needs to take care of urgent problems," she says. "My Monday schedule upon returning to work wasn’t horrible and the week before holidays was much more manageable."

Technology Integrates Communication
While medical record integration is still new in Ontario, Dr. Greiver notes that the province’s largest labs now provide results electronically instead of on paper. This eliminates the need to scan the results into the system and allows her to review results from anywhere as soon as they come in using her Tablet PC.

With plans underway at North York General Hospital to integrate requests from family physicians into its electronic records system, greater acceptance of technology for patient care is coming, says Dr. Greiver. She would ultimately like to see electronic prescriptions being securely sent to pharmacies, but is happy to know that her current prescriptions are legible.

"The pharmacy can actually read the prescriptions, and that improves quality," she says, noting that she would like to see the integration extended so that she could be alerted when prescriptions are filled at the pharmacy. This will let her know that patients are taking the medications she prescribes.
Billing & Reporting Made Better

Before electronic records, Dr. Greiver admits it was difficult to remember everything she was supposed to bill and she would sometimes forget to bill for procedures. With electronic records, billing is done as part of the assessment, and is much more thorough. Additionally, she was blind as to whether or not the practice was reaching the goals set for preventative care initiatives such as flu shots. Doctors receive incentives from the Ministry of Health for preventative care that can translate into a payment of up to $11,000 per year.

“Doing the audits in a paper system was so difficult some doctors were contracting the service out,” says Dr. Greiver. Today, she simply logs into her Tablet PC with Intel Centrino processor technology, generates a list of patients based on a specific criteria, such as all patients aged 65 and over who need to have flu shots. Instantly she gets a list of patients she should be contacting for an upcoming clinic.

During a recent flu clinic, patients came in, swiped their Ontario Health Insurance Plan (OHIP) card and were slotted into the clinic schedule. They were given the shot and then the practice assistant clicked a button to register that the shot had been given, including pre-set data about the dose and lot number.

At the end of the clinic, Dr. Greiver’s practice assistant pre-set the billing code, clicked a button and the bills were complete within two minutes. “There were no charts pulled or put back. My preventive services list was automatically updated,” she says, adding that she can tell at a glance whether she’s on target for the incentives and can take action to improve her results more dynamically.

With the patient records integrated into billing, the process is now seamless.

Future Uses

Dr. Greiver is energized by the strides made to date in moving patient records into the electronic age. However, she thinks more can, and should, be done in to improve patient access to records and the integration of all levels of the medical system from family physicians to hospitals to pharmacies.

She notes that people can view their bank records on demand, but can’t access their own medical files. This would be hugely beneficial in an emergency, provided that a doctor on call had authorization to view a patient’s file.

“Canada and the US are still far behind Europe and Holland,” says Dr. Greiver, who hopes that the government will continue to provide leadership and funding to move more medical practices into this technology. “It benefits the patients and dramatically improves care.”

She’d also like to see greater use of bar codes for lab tests so that she can track a given test from the time it leaves the office to when the results come back. “We can track a package across Canada but I can’t tell the status of blood work once it leaves my office,” she said, adding that bar codes would also increase privacy and security for patients.