

Using Information Technology to Improve Patient Care and Communication: A Practical Guide—Part 2

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Ms Satinsky

In Part 1 of this article, which appeared in *Forum* #1, 2004, I presented a practical guide to help you understand ways in which information technology may be able to help you improve patient care and communication in your practice. I directed my comments there particularly to those of you who are in smaller and solo practices and who may,

for one reason or another, question the value of technology for your patients and for yourselves. I described common applications and suggested steps you can take to determine if information technology can help you.

Here, in Part 2 of the article, I present several short profiles of medical practices that now use information technology to impact patient care and communication. The majority of the examples are of North Carolina physicians, and most of these practices are at the very early stages of using information technology to communicate with patients. Knowing that a major issue will be your return on investment over time, I've also included examples of practices in other states that have been able to document the financial impact of their decisions. Read these descriptions to learn what your colleagues are doing, what challenges they face, how they make their decisions, and how they monitor their success in meeting their goals. Following the practice profiles, I include comments about the experiences of several patients of physicians who have adopted the use of information technology to improve patient care and communication.

Practice Profiles

I've presented the practice profiles detailed below in alphabetical order. Here's a brief list of them and a few points I think are important about each.

- **Blue Ridge Family Physicians (Raleigh, NC):** methodology for selecting vendor for practice management system (PMS) and electronic medical records (EMR) and approach to interconnectivity among vendors
- **Central Utah Multi-Specialty Clinic (Provo, UT):** national recognition for innovative information technology use
- **Duke University Health System (Durham, NC):** progressive introduction of multiple information

technology products, flexibility in honoring preferences of individual departments, and balance between centralization and decentralization

- **Eagle Physicians and Associates (Greensboro, NC):** creative use of its Web site for interaction with patients and approach to trying innovations in small practices prior to system-wide implementation
- **Hillsborough Medical Group (Hillsborough, NC):** use of information technology to support a solo practitioner and his staff
- **LeBauer HealthCare (Greensboro, NC):** approach to moving away from multiple legacy systems within its many medical specialty departments
- **Medoff Medical (Greensboro, NC):** use of information technology by a solo practitioner who both provides patient care and engages in clinical research
- **Mobile-Medicine.Net (Marietta, GA):** new style practice
- **Northern Virginia Family Practice Associates (Alexandria, VA):** significant cost savings through pre-registration and appointment management
- **Sandy Springs Internal Medicine (Atlanta, GA):** customized pre-registration and other interactive systems
- **Triangle Orthopaedic Associates (Durham, NC):** selection and implementation of EMR in a single specialty practice with multiple offices
- **West Columbia Family Medicine (Lexington, SC):** on-line visits, significant return on investment

Blue Ridge Family Physicians (2002)

Blue Ridge Family Physicians in Raleigh has four physician partners, three physician assistants, and 30 staff members. The practice was formerly part of the primary care physician network owned by Rex Healthcare. When Rex offered these physicians the opportunity to buy back their practices, Blue Ridge accepted the offer.

The practice's most pressing need was for a practice management system (PMS) that would handle routine business functions such as scheduling, patient registration, billing and collections, and managed care, and that would also allow the practice to add additional applications. The physicians worked closely with their practice administrator and with an experienced outside consultant to make sure they selected one or more systems that would meet their needs.

During the PMS vendor selection process, Blue Ridge considered several companies, some of which were large and prominent and had been in business for many years. Important criteria in vendor selection

“Learn what your colleagues are doing, what challenges they face, how they make their decisions, and how they monitor their success”

were:

- corporate financial stability,
- willingness to work with Blue Ridge on customized options,
- technical support,
- frequency of system upgrades,
- system comprehensiveness,
- user references and experiences,
- cost.

Blue Ridge selected a small company that offered a comprehensive PMS, including an electronic medical record. The vendor was willing to collaborate with the practice in developing clinical templates and other software functions that met the practice's needs. Blue Ridge pays a monthly fee for the number of system users as well as an access fee to the system. Maintenance and system upgrade fees are included in the monthly fee.

Blue Ridge contracted with a separate hardware and network company to select the computers, small business server, wiring, and installation that would be compatible with the PMS. To make the purchase more affordable, Blue Ridge applied for a bank loan to finance the cost of the hardware equipment. Many other practices rely on the vendor to help with hardware selection and financing. Blue Ridge financed the project with its own bank loan, thus retaining more leverage than it would have had with reliance on vendor financing.

Blue Ridge is pleased with its progress. The practice attributes the success of its implementation to the cooperation and coordination among the PMS vendor, the hardware/network company, the telecommunications vendor, the external consultant, and the staff. The three companies talk with each other regularly to resolve problems as they arise and to incorporate new applications as they are chosen. The PMS vendor tailored its training to a wide variety of skill sets within the practice. The key to the continued success of this system will be recurring training and education for users as questions arise and skill sets grow.

Once the PMS has been in operation for a few more months, Blue Ridge will add applications such as fax software and a lab results reporting system.

The next major project will be building a comprehensive Web site that interfaces with the PMS system. Blue Ridge wants its Web site to accomplish the following:

- provide general information on the practice;
- allow patients to schedule non-emergent appointments;
- send appointment reminders and health alerts for preventive healthcare services;
- notify patients that lab results are available—and that patients can call the office to get them;
- provide general educational information about health maintenance, disease states, and drug interactions, plus links to educational Web sites that are endorsed by the physicians;
- allow pharmacies to request prescription refills;

- allow patients and specialist offices to request referrals;
- allow patients to pay bills on line.

The functions listed above focus on one-sided communication. At this point in its planning, Blue Ridge is comfortable with electronic communication from the practice to its patients. In general, however, it is wary about electronic patient care because of the potential malpractice risks and requirements for HIPAA compliance.

(Joanna Herath, former practice manager, and Helen Clark, consultant, provided information for this profile.)

Central Utah Multi-Specialty Clinic (2004)

Central Utah Multi-Specialty Clinic, in Provo, UT, has 59 physicians and 30 mid-level practitioners in eight locations. The practice's leadership is very supportive of information technology solutions; and, within the past three years, the practice has introduced a new practice management system, electronic medical records, and a Web site. Physicians and patients have the option of using the appointment reminder feature. Although not all physicians use it, that feature has reduced the number of no-show visits in the practice by 50 percent and increased monthly revenue by \$20,000. In the future, the practice plans to extend the appointment reminder feature beyond office visits to scheduled procedures and surgeries.

Jamie Steck, director of information technology at Central Utah, says his practice has received national recognition for its innovative information technology solutions. He expects to add more solutions to the current practice Web site. .

(Jamie Steck, director of information technology, provided information for this profile. The Web site is www.cumcmds.com.)

Duke University Health System (2002)

The Duke University Health System includes physicians who practice in two settings. Most physicians are part of the faculty practice plan, the Private Diagnostic Clinic (PDC), and see patients in primary care or specialty PDC clinics. Other physicians are part of Duke University Associated Physicians (DUAP), and see patients in their private offices. Duke uses information technology to help physicians in both the PDC and DUAP provide better care and communication to patients.

Duke uses a practice management system (PMS) that is suited to its size and complexity. The PMS allows the addition of many applications that have a direct impact on patient care. Although all clinics use a core suite of practice management tools, such as scheduling and billing, they vary in their use of applications related to physician-patient communication. Here are examples.

- A call center module allows clinic triage staff to automatically ask patients why they are calling. By responding to prompts, patients indicate if they are calling for immediate medical advice, to

“The key to the continued success of this system will be recurring training and education for users”

make or change an appointment, or to request a prescription refill. The system automatically stamps the date and time of all correspondence noted in the system. Central intake staff for each participating clinic take direct phone calls from patients as well as messages left on the dedicated answering system. They check the messages at regular intervals and respond appropriately.

- An automated telephone appointment reminder system supplements paper reminder and mailing systems. This system calls to remind a patient of the date, time, and place of an appointment several days before the actual appointment date. Patients who do not like the automatic reminder or who have difficulty using it can request not to be notified in this way.
- A Web-based product called the Duke Patient Channel allows existing patients to make on-line requests for appointments and prescription refills, send on-line messages to participating physicians, pay bills, and enter new insurance information. About 60 percent of the PDC clinics use this system. The Patient Channel is extremely secure, and patients are steadily accepting on-line tools for non-acute requests for healthcare. Staff finds the on-line system helpful in two ways. First, the system automatically categorizes requests and electronically routes the task to appropriate resources. Second, it increases efficiency by allowing staff to batch the inquiries and respond to many requests for the same service (eg, requests for appointments) rather than to a variety of individualized requests.

Duke's clinical information system will also impact patient care. Already seven years in the making at the time of my interview with Duke representatives, the project combines inpatient and outpatient information from multiple clinical service units (eg, heart center, oncology) into a single clinical data repository. Physicians and other clinicians can practice medicine by accessing the database and by calling up patient information that may have come from as many as 100 interfaces and 30 million documents. The system has allowed Duke to eliminate its reliance on paper medical records. Patients benefit because their physicians can so easily call up accurate information.

With respect to information technology decision-making, Duke has a central information technology group that interfaces with groups within each clinical area. The Health System attempts to keep a balance between centralization and decentralization.

(Dr Michael L. Russell, MD, associate chief information officer; and Roman Perun, manager, Internal Consulting, PRMO Information Systems, and Duke University Health System, provided information for this profile.)

Eagle Physicians and Associates, PA (2002)

Eagle Physicians and Associates, PA, is an independent, physician-owned multi-discipline group practice located in the Triad area. It was formed by 33

private physicians who practiced in five long-established small group practices and who wanted to remain independent from large insurance companies, national corporations, and hospital systems. More than 80 physicians and other providers see patients in 14 sites in the Greensboro area. Eagle's Board of Directors consists entirely of physicians who practice medicine in Guilford County.

A major impetus for Eagle's formation in 1995 was to increase physicians' leverage with managed care companies. As the practices worked through details of the merger, they realized that becoming a true merged practice would require centralization of functions like information technology. Important milestones in Eagle's information technology development have been:

- purchase of a central computer for billing and management purposes,
- addition of data warehouse capability that has enhanced both the practice's ability to slice and dice information and its flexibility in reporting,
- upgrade of the practice Web site to allow patient interactivity.

Eagle is moving more slowly with its use of electronic medical records (EMR). Rather than introduce the technology into the entire practice without a trial, it will use one of the smallest practices to pilot the EMR concept.

Eagle's revamped Web site already includes many features that have reduced both demands on office staff and operating costs. For example, patients can obtain information on office locations, providers, specialties, insurance plans, hospital care, and frequently asked questions. A patient education section of the Web site updates patients on current issues such as flu shots for children and HRT for women. The practice deliberately features controversial issues and articles written by its own physicians as a strategy for encouraging patients to regard the practice as a reliable health information resource.

The planned upgrade of the Web site to allow patient interactivity is expected to reduce operating costs even further. Unlike the earlier Web site upgrades that concentrated on staff activities, these upgrades will begin to deal with physician functions. The practice wants to activate the interactive capability before it reaches the point where it can't meet patient needs.

Among the Web-based applications that Eagle will activate are: pre-registration, requests for appointments, reports of lab results, appointment confirmations, e-mail instructions for procedures, and on-line capability for patients to interact with customer service representatives with questions about bills.

Eagle will have the ability to use the Web for virtual office visits. It is comfortable with on-line medicine for a specific group of established patients with established problems such as urinary tract, sinus, and yeast infections. Patients who use the virtual office visit capability will pay by credit card on-line prior to

“The project combines inpatient and outpatient information from multiple clinical service units into a single clinical data repository”

“The way to successfully combine high-quality patient care with good business sense is through the use of technology”

receipt of advice; instructions for billing are provided. The practice is not comfortable with virtual office visits for new patients or for existing patients with new problems. These patients will be asked to make an appointment to come into the office for a face-to-face visit with a physician or other provider.

Eagle’s process for making information technology decisions has been thoughtful and inclusive. The Information Technology Committee includes six physicians, four information technology professionals, the director of Operations, and several practice managers. When the practice did its strategic information technology planning several years ago, the information technology group was divided into three subcommittees that worked on the Web, the server, and centralized services such as transcription, scheduling, phone triage, and EMR. These three committees did the groundwork that resulted in the plan that Eagle has today.

The process by which Eagle enhanced its Web capability included not only representatives of the Information Technology Committee and its selected vendor. A Total Quality Management Subcommittee that includes physicians and the director of Operations reviews everything that goes on the Web site.

With respect to implementation, Eagle has the luxury of being able to test out new applications in some of the smaller practices before involving all its offices.

The problems that Eagle has experienced in its information technology upgrades have been minor compared to the benefits the practice has recognized. The practice’s attempt to have physicians capture hospital charges with hand held devices did not work because posting the electronic charges still required human intervention and the effort was not worth the investment. Also, as sometimes happens, at the crucial moment when the practice planned to unveil its new Web site at a large provider meeting, Internet connectivity failed to work. Nonetheless, Eagle feels that the way to successfully combine high-quality patient care with good business sense is through the use of technology.

(Mary Pat Whaley, formerly chief operating officer, Eagle Physicians and Associates, PA, provided information for this profile. The Web site is www.eaglemds.com.)

Hillsborough Medical Group, PA (2002)

Hillsborough Medical Group, PA, is a small primary care practice with one physician and two part-time family nurse practitioners. Although small in size, the practice has aggressively pursued information technology solutions that address its particular issues. Philip Singer, MD, the physician, has taken a leadership role in investigating options.

The practice has recently purchased an electronic medical records (EMR) system in order to achieve the following goals.

- Reduce practice overhead costs by:
 - (1) eliminating the need for paper charts and their storage,

- (2) eliminating transcription costs,
- (3) improving the efficiency of work flow by making clinical information immediately available to staff.

- Provide a structure for clinical information that will help standardize care provided by all practitioners.

In Dr Singer’s opinion, it was important to use the same vendor for both the EMR and the practice management system (PMS). The EMR vendor that he preferred had recently acquired its own PMS product and was experiencing growth problems. Installation of the PMS did not go smoothly. Out of frustration, Dr Singer brought in another vendor that also failed to meet his needs. He then went back to the original vendor.

The functions of Dr Singer’s EMR system that enable him to improve patient care include capturing information at the point of care with a touch-screen notepad computer, having all clinical information about the patient, including scanned reports and correspondence, organized and accessible, and providing a system to record all interactions with the patient, including phone calls, prescription refills, and referrals. The system interfaces with the reference lab, allowing direct importation of test results to the patient chart. With respect to prescriptions, there is a comprehensive on-line formulary, and prescription orders and refills can be faxed directly to the pharmacy.

Dr Singer’s fact-finding process involved visiting and talking with other practices. He arranged to accompany physicians as they used the system and to talk directly with patients about their response to use of technology. He was particularly interested in whether or not the physician’s use of technology interfered with personal communications. Patients had a positive response, and Dr Singer was reassured. Although his personal response to the new technology has been positive, his mid-level practitioners have been slower to embrace the innovations.

Dr Singer is comfortable with his existing telephone and mail systems that communicate lab results to patients. He is reluctant to use e-mail for patient care because of privacy and reimbursement issues.

(Dr Philip Singer provided information for this profile.)

LeBauer HealthCare (2002)

LeBauer HealthCare is a multi-specialty practice in the Greensboro area. Fifty-two physicians and two psychologists provide care in eight sites. The specialties represented are cardiology, family practice, gastroenterology, internal medicine, internal medicine/pediatrics, pulmonology, and behavioral medicine. Although the practice merged with the Moses Cone Health System in 1999, it retains its ability to manage its information technology and has its own full-time information technology director.

Strategic and operational planning for information technology at LeBauer is complex. Because cardiology

gy, gastroenterology, and pulmonology are technology driven, physicians in these specialties have always taken a particular interest in the practice's overall information technology direction. The medical director and other physician leaders collaborate with the information technology director to provide guidance and direction.

As in many large practices, over the years LeBauer has put in place multiple freestanding information technology applications that vary in quality and do not always communicate with each other. A major challenge is to introduce compatibility into existing systems while identifying new and appropriate solutions.

The information technology applications now in place at LeBauer include the following:

- digital dictation;
- a practice management system (PMS) that has many business applications such as accounting, scheduling, and managed care (the internal laboratory system and an external laboratory system now interface with the PMS);
- varying use of palm devices and PDAs (personal data assistants) that organize and manage information and access data on hospitalized patients;
- independent systems in gastroenterology and cardiology;
- varying use of e-mail for intra-office and physician/patient communications.

Physicians vary in their use of e-mail for communication within the practice and between themselves and patients. Some physicians are very comfortable answering questions and providing information on line, provided that their patients don't need an office visit. Similarly, some but not all physicians use Internet databases such as Scientific American Medicine, MD Consult, and UpToDate to enhance patient care. Patients are generally receptive to the introduction of these resources into the physician-patient encounter and enjoy working with their physicians to find reliable on-line information.

Within the past two years, the information technology director has encouraged the practice to combine its many separate applications into a single system. The practice has purchased its own server, and the lab system now interfaces with the PMS. The practice is linked to the hospital information system so physicians can quickly access information on transcription notes, test results, and other relevant facts for their hospitalized patients.

Moving forward, LeBauer's priorities are to:

- activate the electronic prescription module of the PMS;
- meld the transcription system into the PMS;
- introduce EMR into the practice and, over time, pilot test it with the pulmonary physicians, and then transition more than 135,000 active charts into electronic form;
- upgrade the current telephone answering system to be more efficient;

- standardize the e-mail system using guidelines available from the AMA and AMIA;
- formally train physicians and staff;
- upgrade the current Web site to provide more information for patients.

(Dr Michael Norins, medical director, and Eric Johnson, IT director, at LeBauer HealthCare provided information for this profile.)

Medoff Medical (2002)

Jeffrey Medoff, MD, opened his solo gastroenterology practice in Greensboro in March 1999. He had previously been part of a large multi-specialty clinic that was bought by the Moses Cone Health System.

Medoff Medical includes two businesses: consultation in gastroenterology and a separate clinical research company. One of Dr Medoff's motivations for leaving the larger group of which he had been a part was to balance the revenue generated from both businesses so he could focus on his patients' needs and his research interest.

As a solo practitioner who spends a portion of his time seeing patients and who contracts with just three managed care companies, Dr Medoff's need for information technology is different from that of physicians who see a high volume of patients and/or who are dealing with many managed care companies. He uses it to enhance staff and physician accessibility to patients and to keep overhead as low as possible. Dr Medoff has built his information technology support gradually, and he now has systems that support patient scheduling, accounting, and billing functions. He can access patient records from locations outside his office to review demographic information. His new PDA (personal data assistant) has PC-based software and will allow him to download patient information directly into the hospital database. He is currently reviewing electronic medical record systems so he can reduce the high cost of out-sourced transcription services. He uses e-mail regularly to communicate with pharmaceutical companies and contract research organizations, but he is unlikely to use e-mail to communicate directly with patients.

Reliance on an experienced external consultant has enabled Dr Medoff to build his information technology capabilities on an incremental basis. The consultant makes sure that systems purchased from different vendors are integrated with each other. As the liaison between vendors and the practice, the consultant ensures that training and technical assistance meet the needs of all staff.

Given the small size of Medoff Medical, Dr Medoff has been able to put in place patient communication systems that are not technology driven and that give patients excellent access to staff and to Dr Medoff himself. He educates his patients so that they have a good understanding of their medical conditions. Patients who call during office hours speak directly to a staff member; there is no telephone triage system. Dr Medoff himself is on call 24/7. After hours,

“A major challenge is to introduce compatibility into existing systems while identifying new and appropriate solutions”

patients hear a voice message that prompts them to indicate an emergency need. Once the phone system picks up an emergency need, it pages Dr Medoff immediately, regardless of where he is within the United States. The system continues to page him every five minutes until he responds to the page. He then calls the patient directly.

Because this telephone communication system works so well, Dr Medoff has no need for e-mail communication with patients. Aside from lack of need, he has concerns about the time it takes to answer e-mail, reimbursement, and confidentiality issues.

Dr Medoff offers the following advice to physicians who want to use information technology in their practices.

- Go slowly and thoughtfully.
- Regardless of how much you like technology, don't try to make decisions for your practice yourself. Look for an external consultant with experience in the medical field. Find someone who is not selling a product and who can provide an honest opinion of various products on the market.
- Use technology to enhance, not reduce, physician-patient contact.

(Dr Jeffrey Medoff of Medoff Medical provided information for this profile.)

Mobile-Medicine.Net (2004)

Dr Frenesa K. Hall's innovative concierge practice in Atlanta, GA, Mobile-Medicine.Net, provides care to patients at work or home rather than office-based, insurance-driven medicine. She depends on her Web site to run her practice and is particularly satisfied with the pre-registration feature. In Dr Hall's opinion, patients provide more complete information when not under time pressure to provide details. By saving time spent directly with Dr Hall, they also save money, since in this practice patients are responsible for their own payments.

A lab test-reporting feature works particularly well for her. When she receives information for a particular patient, she records her comments. The patient can retrieve her interpretation through the physician's Web site or by telephone. Dr Hall also appreciates the low cost of this service—less than a stamp.

Dr Hall said, "I'm thrilled with our Web site. It enhances my ability to maintain a mobile practice, enabling better quality of patient information than we would otherwise receive, and to document patient-generated information."

(Dr Frenesa K. Hall provided information for this profile. The Web site is www.mobile-medicine.net.)

Northern Virginia Family Practice Associates (2004)

Northern Virginia Family Practice Associates (NVFPA), Alexandria, VA, is a busy practice located in the Washington, DC, metropolitan area. The community is very computer literate. The introduction of an interactive Web site met the needs of both the

practice and patients. The practice was struggling with a large volume of write-offs related to incorrect insurance information. By introducing a pre-registration function, it has dramatically reduced the percentage of write-offs and greatly improved its accounts receivable.

Prior to implementing pre-registration, the average daily write-off for the practice was \$1,000 due to incorrect insurance information. Now that pre-registration is in place and is in use by 95 percent of the patients, the write-off amount is almost non-existent—about \$1,000 a year. Using the information it gets both from patients and from the on-line eligibility checks that many insurers now offer, the practice can easily verify information before patients come into the office. Eligibility checking reduces collection costs and insures the practice gets paid in a timely manner for work performed.

An appointment management function is also in place, and the practice plans to phase in the use of other functions such as prescription renewals, on-line bill payment, and, eventually, virtual office visits.

Mary Doohar, MSN, practice administrator at NVFPA, says, "Our patients love the user-friendly Web site format as well as its interactive and educational features. In addition, the Web site is great for marketing our family practice."

(Mary Doohar, MSN, practice administrator, provided information for this profile. The Web site is www.nvafamilypractice.com.)

Sandy Springs Internal Medicine (2004)

Sandy Springs Internal Medicine is located in Atlanta, GA. The practice has 35 staff members. The information technology that supports the practice includes a practice management system, a document management system, electronic medical records, and multiple Web-based functions.

Initially, Sandy Springs had a practice Web site that was not HIPAA-compliant for e-mail communications. It overcame that deficiency by introducing a new system and it is now able to assure patient privacy and security. The practice has also streamlined many other administrative functions once done by highly paid staff.

Sandy Springs' pre-registration system has been customized to meet its needs. Its forms for patient history, review of systems, family history, and insurance are on the Web site. Patients complete the forms at their convenience prior to coming to the office.

(Bret Smith, practice manager, provided information for this profile. The Web site is www.sandyspringsim.com.)

Triangle Orthopaedic Associates, PA (2002)

Triangle Orthopaedic Associates (TOA), PA, is an orthopaedic surgical practice specializing in orthopaedic medicine and musculoskeletal disease. Its 20 physicians are fellowship trained in all orthopaedic subspecialties. The surgeons and other clinical staff practice in nine locations throughout the Piedmont.

"Use technology to enhance, not reduce, physician-patient contact"

The practice offers a comprehensive array of services, including orthopaedic surgery, physical medicine and rehabilitation, physical therapy, aquatic therapy, imaging, and orthotics and prosthetics.

Information technology is very important to the practice, provided that technology can meet a recognized need and that it doesn't conflict with important practice values. Ten years ago, TOA computerized its office notes. As the practice expanded in scope, number of locations, and volume of patients, it decided to upgrade information technology again so that physicians could obtain medical records and imaging remotely. Digital imaging is now in place, and after a two year search for a vendor, a Windows-based electronic medical record (EMR) system was implemented. The practice has revised its original Web site and now has the capacity to activate features that allow patients to schedule appointments, pay bills, fill out registration information, and send comments. The practice does not expect to use its Web site for on-line communications with physicians and other clinicians regarding test results and on-line responses to questions. The existing call triaging system allowing patients to talk directly with a staff member works very well, and the practice prides itself on its personalized human touch in responding to patients.

Triangle Orthopaedics uses a team approach to make its information technology decisions. Its information technology team includes one or more physicians, the practice administrator, and a full-time information technology manager. The small group regularly seeks input and buy-in from other physicians and staff. Because of the size and importance of the EMR conversion, TOA engaged a specialty consulting firm that provided assistance with work flow analysis, preparation of a request for a proposal, vendor site visits, visits to other practices, vendor selection, and project management.

Because TOA has a number of information technology applications, staff training is a priority. For the EMR implementation, the training sessions were for all staff and lasted for an entire week. Going forward, the practice believes it can improve its staff training by training fewer people for shorter time intervals so the office is not decimated during the training sessions. Training and availability of applications must be carefully timed so that staff can return from training and immediately use the applications at their desks. If they are trained in advance of the availability of an application, they are likely to forget what they learned.

A goal for all TOA's information technology innovations has been dollar savings. Implementation of all of the projects is relatively recent, and when I wrote this profile, financial results were not yet measurable.

The practice has experienced several obstacles in its selection and implementation of technology applications.

- With respect to the upgrade from automatic charting to EMR, the practice attempted to find a vendor specializing in orthopaedics. This approach

didn't produce the desired result, so the goal became to find an application that would lend itself to easy customization for the practice.

- Vendor instability was also a problem. The practice is particularly leery of vendors that are financed with venture capital and that have not been in business for more than two years.
- As might be expected in a practice with 20 physicians, reaction to the new EMR has not been unanimously positive. Some of the surgeons do not want to take the time it takes to learn the new system and input information. Thus, although the upgrade may save the practice dollars, it may not save time for individual physicians.

(Richard F. Bruch, MD, Deborah Wilkins, formerly with the practice, and Tim Miller of Triangle Orthopaedic Associates, provided information for this profile. The Web site is www.triangleortho.com.)

West Columbia Family Medicine (2004)

Allen Wenner, MD, is one of three physicians at West Columbia Family Medicine in Lexington, South Carolina, that uses "virtual" office visits for patient communications. The practice initiated virtual office visits by encouraging existing patients with chronic conditions to use electronic communication. The physicians quickly realized that patients couldn't easily make the distinction between chronic and acute conditions. In order to be more responsive to patients' requests, the practice is now adding the capability to respond to both chronic and acute needs within a reasonable time frame—two hours during office hours, four hours after office hours, and the next morning for questions sent in after 9:00 PM. The practice believes improving access to physicians and allowing them to respond quickly greatly enhances the quality of care for patients.

Financially, the return on investment has been dramatic. On average, physicians take eight seconds to respond to an electronic question, and the charge for the on-line service is \$50. The practice is moving toward handling up to 18 on-line inquiries per day. At \$50 per inquiry, that is an increase in revenue of \$900 per day. The practice also generates additional revenue by seeing 20 more patients in the office.

Dr Wenner, who is also a software design consultant, is a sophisticated user of information technology solutions in medical practice settings. He believes information technology offers contemporary solutions for problems physicians are only beginning to recognize they can solve.

(Dr. Allen Wenner provided information for this profile. The Web site is www.columbiasdoctor.com.)

"Information technology offers contemporary solutions for problems physicians are only beginning to recognize they can solve"

Patient Perspectives

The Bowers Family (2002):

Mr Ben Bowers and his wife, Eugenia, residents of

Greensboro, have used e-mail for the past six months to communicate with their primary care physician. Mrs Bowers had a stroke in late April and spent seven weeks in the hospital and required other levels of care within the Moses Cone Health System. After she returned home, Mr Bowers, who has retired from running the newsroom at a major Greensboro newspaper, assumed responsibility for her care.

The Bowers' physician at LeBauer HealthCare has taken a number of steps to help Mr Bowers care for his wife. He makes house calls on a regular basis so that the Bowers do not have to struggle with office visits more often than is absolutely necessary. At their physician's suggestion, Mr Bowers communicates by e-mail to ask questions about prescriptions, to confirm the date and time of house calls, to obtain authorization for occupational and physical therapy, to coordinate visits to specialists and testing, and to obtain advice and support for his own high blood pressure.

Use of e-mail enables Mr Bowers to communicate directly with his physician in a manner that he finds quick and efficient. Without going through office clerks and nurses, he knows he will get a response from his physician within a few hours after he sends his question or concern. E-mail allows him to keep a record of all communications with his physician in case he wants to recap his questions and the physician's answers.

The Author, Ms Satinsky (2004):

I'm a healthy female in her 50s. For the past five years, I've seen my physicians for preventive care and for various athletic injuries incurred when my ambition surpasses my abilities. My primary care physician is part of a medical practice that does not use technology for patient care and communication, and my gynecologist is part of a large practice that relies heavily on information technology. I'm in a good position to contrast the experiences that I have with both physicians.

When I call my primary care physician for an appointment, for a prescription refill, or to get medical advice, I talk first with the telephone receptionist, then with a nurse, and less often with the physician himself. If I schedule an office visit, I talk with three more people. In some cases, I give the practice the same information six times. I am not able to leave a voice-mail message after office hours or on weekends unless I need urgent care.

In contrast, when I want to contact my gynecologist, I have several choices. For routine telephone calls, I call a main number, and I'm prompted to specify my need for medical advice, an appointment, or a prescription refill. Using this system, I either talk with a human being or get a call back very quickly. My physician has encouraged me to use e-mail to communicate with him about routine questions, and he responds quickly to any inquiries I make. I also have the option of using the practice's secure, Web-based communication tool.

I get outstanding medical care from both my primary care physician and from my gynecologist. Nonetheless, if I ever decided to change primary care physicians, I would look for a good physician in a practice that made communication easier for patients.

Conclusion

I think that using information technology to improve patient care and communication is a critical component of medical practice management. If you have read all of the profiles, you may be struck by the same observation that I had—that no two practices took the same approach. That's as it should be, as each practice has unique needs, budgets, and visions for the future. I encourage you to join your colleagues in determining what's right for your practice.

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Watch the *Forum* for Ms Satinsky's article on electronic medical records, currently scheduled for publication in *Forum* #3, 2004.

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