

# Achieving Tangible IT Benefits in Small Physician Practices

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## Acknowledgments

**First Consulting Group** is a leading provider of consulting, technology and outsourcing services for health care, pharmaceutical, and other life sciences organizations in North America and Europe. More information about FCG is available at [www.fcg.com](http://www.fcg.com).

This report was compiled from interviews with over two-dozen physicians and their staff in small practices who are using information technology at the point-of-care today. While these early adopters are not necessarily typical of their thousands of practicing colleagues who are yet to use technology, the benefits they have been able to achieve show that IT tools for the small practice have moved from concept to reality. Many thanks to these physicians for sharing their stories and lessons learned in the hopes of inspiring others (see Appendix B).

Several colleagues contributed their time in reviewing this document throughout its development. Bruce Bagley, M.D., Past President of the American Academy of Family Practice, and Michele Mann, Director at First Consulting Group, specializing in ambulatory physician practices and physician networks, both provided their valuable perspectives on the real implementation experiences of physicians using technology at the point of care. We are grateful for their insights.

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# Executive Summary

UNTIL RECENTLY, THE SUCCESS STORIES OF SMALL physician practices implementing information technology (IT) beyond billing functions have been few and far between. IT products available in the marketplace were mostly designed with larger physician groups in mind, with an associated cost and technological complexity generally not within the reach of the small practice.

Those conditions are now beginning to change for a variety of reasons:

- Web-based technology and widespread access to the Internet allow vendors to offer remotely hosted applications that simplify the task of managing the technology.
- Many vendors now offer IT via the Application Service Provider (ASP) model, which spreads the system costs over time.
- The advent of mobile computing devices enables a better fit with the work style of the physician, without huge costs for equipment and wiring.
- Some vendors now offer modular, tool-based products, providing more options for adding functionality incrementally.
- Many vendors are designing products that make interoperability (ability to integrate different systems) and data transferability (from one system to another) less problematic.
- Vendors are reconfiguring their products and pricing models to meet the needs and budgets of small practice.

How are small physician practices taking advantage of this new IT environment? The research conducted for this report sought to identify the spectrum of IT approaches in use in small practices today and to demonstrate through case studies that physician use of IT can and does produce qualitative and quantitative benefits. Physicians and staff at more than two-dozen small physician practices were interviewed along with vendors and leaders from several national professional organizations. These interviews attest to the successes that small physician practices are enjoying with a wide variety of IT tools.

A look across these IT success stories reveals common elements:

- A specific operational problem that is the target of the IT initiative;
- A motivated physician interested in IT leading the charge; and
- A vendor product that represents a good fit for addressing the identified problem.

The interviewed practices offer lessons from their experiences finding, selecting, implementing, and evaluating their IT solutions. Issues of product integration, long-term practice planning, workflow, and budgeting are considered as well.

Though few of the interviewed practices undertook a formal return-on-investment analysis before, during, or after IT implementation, physicians and practice staff all shared abundant evidence of the benefits they achieved for the practice and their patients. Some evidence was anecdotal, some was quantified, but every story articulated some measure of success in addressing the problem the practice set out to solve.

The case study lessons are augmented in this report by an overview of available products and their general characteristics. Taken together, this report can serve as a mini-guide for the small physician practice eager to find IT solutions for the challenges in their practices.

# I. Overview

*“Physicians can’t effectively care for patients nowadays without the help of computers. We don’t expect travel agents to memorize hundreds of airline flight schedules, and we certainly can’t expect physicians to memorize all the available drug options.”*

—Bruce Bagley, M.D.,  
Past President of the American  
Academy of Family Physicians

UNTIL RECENTLY, SMALL PHYSICIAN PRACTICES have not been in a position to benefit from the use of information technology (IT) other than through billing functions. Cost, workflow, and technology, among other issues, had combined to create barriers that small practices simply could not surmount. Vendors concentrated on serving the needs of larger practices, where financial and other resources to support IT implementation were more likely to be found. But a number of factors have recently changed.

## The New Technology Landscape

The technology and product landscape has changed in ways that are creating strong appeal for small practices. Some of the more significant changes are listed below.

- Web-based technology and widespread access to the Internet allow vendors to offer remotely hosted applications that simplify the task of managing the technology. Applications no longer require expensive mainframe computers or high-end PCs.
- Many vendors now offer IT to physician practices via the application service provider (ASP) model, which spreads the system costs over time rather than requiring significant up-front investment.
- Mobile computing devices fit the work style of the physician, bringing tools to the point of care without necessitating the hardwiring and equipping of every exam room and office with PCs.
- Some vendors now offer modular, tool-based products, providing more options for adding functionality incrementally. This provides the flexibility for individual practices to work on pressing problems first, then tackle additional challenges later with the same vendor and product suite.

### **A New Range of Technical Possibilities**

*With increased use of the Internet, development of wireless technology, and advances in end-user computing devices, small physician practices have new options for deploying technology in their practices.*

#### **Application Hosting**

- At the physician office
- At the vendor via the Internet (using an application service provider hosting model)

#### **Network Infrastructure**

- On a fixed Local Area Network (LAN), using traditional wiring to each computing point
- On a mobile wireless network, using radio frequency to transmit data through a centrally located wireless server

#### **End-user Devices**

- Office- and exam-room-based PCs with flat panel monitors, touch screens, and CPU (central processing unit) devices that can be hidden or stored centrally
- Wireless laptops and handheld tablet devices
- Handheld Personal Digital Assistants (PDAs) using either Palm- or Windows-based technology

- Technological advances in computer networking enable computers in a small practice to be linked using a wireless network, alleviating the need for disruptive computer cabling.
- A new breed of computing devices such as wireless laptops, flat screen monitors, and handheld devices make physician computing more easily possible in crowded exam rooms and on the run.
- Many vendors have also been employing generally accepted technology standards in their product design, making interoperability (the ability to integrate different systems) and data transferability (the ability to move data from one system to another) less of a concern than in earlier days, when systems could rarely communicate with each other and a vendor's demise could leave clients with no way to access or easily transfer their vital information. True industry standards will further help improve the situation, but vendors are still better aligned now than they were five to ten years ago.

With the ability now to deliver more affordable tools to small physician practices, many IT vendors who originally targeted large providers are now eager to serve the 35 percent of active physicians in the United States who work in solo or small physician practices. Many have reconfigured their products and pricing models, and new vendors have emerged specifically targeting this practice setting. As a result, the IT options for the small physician practice have markedly expanded in the past few years. Not only have several more affordable multi-function EMR products come onto the market, but there are numerous single-function products available that are relatively inexpensive.

## The Time Is Right: Meeting the Challenge

The opportunities for IT solutions for small practices could hardly come at a better time. The challenges that face physician practices are not trivial and, in fact, may be worsening. Recent reports of physicians leaving practice altogether and shortages of specialists in some regions of the country may represent the disillusionment of physicians with the practice environment.<sup>1</sup> Physicians face a number of marketplace challenges:

- **Declining revenue.** Physician practice revenue has continued to shrink, due largely to declining reimbursement by insurers and stricter rules for payment.<sup>2</sup> According to an American College of Physicians-American Society of Internal Medicine analysis, the average solo general physician practice will lose nearly \$8,000 in revenue in 2002 from declining reimbursement—in particular from Medicare.<sup>3</sup>
- **Administrative burdens.** The ever-escalating complexity of documenting care in a largely paper-based setting creates a huge burden for the small practice. With increased scrutiny by the federal government for health care fraud and abuse and the pressures that managed care continues to apply, physicians must provide accurate, detailed documentation of care or risk denial of payment and allegations of fraud. A majority of surveyed physicians report dissatisfaction with the amount of time they spend on administrative duties compared with patient care, and 95 percent believe that managed care has increased the amount of administrative paperwork required.<sup>4,5</sup>

- **Complexities of clinical care.** The need for physicians to have comprehensive, up-to-date information about treatment options and pharmaceuticals as well as immediate access to relevant patient information is increasing due to a number of trends. These include the proliferation of medical technologies and treatment options, direct promotion of pharmaceuticals to the public, widespread access to the Internet, and newly heightened concerns about patient safety. Yet most small physician practices are disadvantaged by their reliance on paper-based medical records.
- **Increased patient expectations.** Patients are not sitting quietly on the sidelines: As their share of health care costs has increased and the Internet has made access to information easier, patients have become more involved in the care process, and their expectations for shared decision making and better service and results have grown as well.

The information technology implications of these marketplace factors are obvious. But to what extent have small physician practices actually used IT to address the challenges they face? Which applications are suited to the small physician practice in terms of workflow, cost, and technological factors? How much effort and process change is required to implement and use these systems? And, most important, can measurable benefits actually be achieved?

Addressing these questions, this report illustrates why and how numerous small practices are turning to more advanced IT solutions to address their practice needs. The physicians and practices featured in this report are necessarily early adopters, but their success in integrating affordable tools demonstrates what is possible today and may inspire others to follow.

## II. A Case Study Perspective on IT Use in Small Physician Practices

*The processes they undertook highlight valuable lessons for other physicians considering the use of technology in their practices.*

NEARLY TWO-DOZEN SMALL PHYSICIAN PRACTICES using information technology were interviewed as part of this research report. While there were similarities among the challenges they were trying to address, each achieved different results in doing so. The processes they undertook highlight valuable lessons for other physicians considering the use of technology in their practices. The following case studies reflect the range of product types available and the spectrum of results they were able to achieve; they are presented here in their entirety. While the vendor marketplace is evolving rapidly, with new vendors offering products for the small physician practice and others folding, these case studies are indicative of the types of products currently available in the marketplace. Chapter III will discuss what these case studies reveal.

### Confirming Patient Appointments

#### Case Study 1

Jonathan Nissanoff, M.D.  
San Diego Advanced Orthopedic Center  
San Diego, CA

*Challenge:* Save time confirming patient appointments

*Solution:* Automated appointment reminder system from TeleVox

*Results:* Receptionist spends less time confirming appointments, more time helping patients

Dr. Jonathan Nissanoff, one of three physicians in an orthopedic surgery practice, wanted to find a way to save time and money confirming patient appointments. His practice's receptionist was spending at least an hour every day placing calls to patients—time that otherwise might have been spent supporting patient care activities. He was introduced to a telephone messaging vendor at a professional academy meeting several years ago and decided to purchase their application.

*The system-generated reminder calls are automatically placed to patients each evening.*

The initial purchase cost him about \$5,500 (which he paid in a lump sum) and took less than a day to install. The vendor created a “bridge” or interface from the practice’s appointment system so that upcoming appointments could be queued up for calling. The vendor’s on site support person spent time training staff and reviewing the initial message quality. Now, once the current appointment information is copied over to the reminder system each day (a 5- to 10-minute exercise), the system-generated reminder calls are automatically placed to patients each evening. When the practice recently moved, they even included their new address and directions in their reminder messages. They’re also considering implementing a feature that allows them to remind patients to call and schedule their follow-up appointments.

In Dr. Nissanoff’s opinion, the time he has saved in staff costs has quickly paid for the system.

## Using a Handheld Application to Find Drug Information

### Case Study 2

Andrew Murphy, M.D.  
Asthma Allergy & Immunology of Chester County, West Chester, PA

*Challenge:* Improve access to up-to-date drug information

*Solution:* Handheld electronic drug reference from ePocrates

*Results:* More streamlined patient visits

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Dr. Andrew Murphy is one of two physicians in an allergy and immunology practice. He began using a handheld electronic drug reference application, ePocrates, a year or so ago because the hard-copy PDR “was a pain to use” and he needed quick and easy access to current drug information. His key criteria for selecting a

product included: portability, reliability of information, and cost. He discovered this particular product through a drug representative. Because the purchase cost for the application was so reasonable, he had no need to develop a formal business case or undertake a return-on-investment analysis to justify its purchase.

*The cost was so reasonable, he had no need to develop a return-on-investment analysis.*

Implementation was easy: He simply logged onto the Web to purchase the product, register as a new user, and download the application to the Handspring device that he already owned. Because the application is designed as a simple, intuitive reference tool for physicians to use during a patient visit, he could begin using it immediately with no advance planning or training and didn’t need to involve any of his office support staff.

While the benefits of his using the application were not huge or necessarily quantitative<sup>6</sup>, Dr. Murphy believes that his use of the tool improved his work in at least two ways:

- Patient visits became more streamlined and “probably quicker in the long run” because he was able to access more focused drug dosing and cost information; and
- The quality of the care he delivers has improved through the drug interaction information he can now more easily access.

And while he couldn’t say that he saved money or increased his productivity, Dr. Murphy did recommend that other physicians try such an application as an easy way to improve their work lives.

## Using a Web-based Prescription-writing Product

### Case Study 3

Reginald Rice, M.D.  
Placerville, CA

*Challenge:* Improve prescription-writing process

*Solution:* Electronic prescription writer from Axolotl

*Results:* Improved quality of care and legibility of prescriptions

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A solo family practitioner since 1992, Dr. Reginald Rice has always been interested in electronic medical records (EMRs). In off-site meetings and retreats with his hospital colleagues as a senior staff physician, Dr. Rice would discuss the possibility of implementing an EMR but “there were no really good products” out there. And when he was ready to buy a product, the price tag was too high.

*Prescriptions are now faxed directly to the pharmacy, which patients appreciate.*

As an alternative to the EMR, Dr. Rice began to consider addressing one critical element of his office visits—the pharmacy component. Drug information was “growing in leaps and bounds,” he said, and it was becoming more difficult to keep track of medication management issues. He had met a physician involved in early development work at Axolotl, liked their prescription writer product, and decided to use it.

Dr. Rice’s biggest hurdle in implementing the product did not involve the product itself but rather installation of the PC hardware and high-speed (“DSL”) network connection. He identified a local PC consultant to complete this installation; the process took six weeks, due largely to installing the network connection. Using the application itself simply required his having access to the Internet and signing up for the product through the vendor’s Web site. He also chose to electronically download his patients’ demographic information from his practice management system into the new product, which cost an additional several hundred dollars. His total costs were under \$3,000.

The result: Dr. Rice was easily able to incorporate use of the product into his practice workflow from day one with little training and preparation. While writing prescriptions now takes him a bit longer than it did by hand, he touts the drug alerts, prompts, and dosing information as very helpful—especially as an older physician. He can access the application on a Palm device in the exam room with the patient or from a PC at his nursing station. Multiple medication refills are handled more easily and prescriptions are now faxed directly to the pharmacy, which patients appreciate. And because the product “takes prescription legibility out of the equation” he has no doubt that he’s improving the quality of his patient care as well. While there were no tangible benefits to his use of the product, Dr. Rice reports, “I’m using it for the value it provides” in accessing drug information and refilling medications more easily.

## Note-writing as a Step on the Road to an EMR

### Case Study 4

Irene McAleer, M.D.  
Pediatric Urological Associates  
San Diego, CA

*Challenge:* Reduce transcription costs

*Solution:* Web-based notes writer from  
MedicaLogic

*Results:* Nearly eliminated reliance on  
transcription along with the  
associated costs

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### Case Study 5

Howard Landa, M.D.  
Loma Linda Urology  
Loma Linda, CA

*Challenge:* Improve access to patient data and  
cost savings

*Solution:* Web-based notes writer from  
MedicaLogic

*Results:* Improved legibility of record, better  
access to patient information, and  
minimal use of transcription

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Not all practices have the resources to implement an EMR; some have found value in taking incremental steps.

Dr. Irene McAleer found that using transcription was expensive for her—plus there were errors, rework, and delays. She had a colleague who was “really into IT,” and this inspired her to inquire about solutions while attending an annual professional meeting several years ago. She found the MedicaLogic Encounter product.

Dr. Howard Landa was familiar with such problems. Over the course of his career, he had witnessed practices using handwritten notes, typewriters, and transcriptionists to document patient visits. He set out with a goal to improve his own visit notes—making patient information clearer and easier to access—and to save money for his seven-physician practice. He became acquainted with the MedicaLogic Encounter product through his work at a neighboring medical center.

*He downloaded the product and trained himself to use it over the course of a weekend.*

Implementation was relatively easy for both physicians. Because this product was affordable and “we didn’t have to re-do the whole office,” Dr. McAleer says the practice was readily able to implement it in less than a month after registering it, downloading it off the Web, and getting it set up. Similarly, Dr. Landa downloaded the product and trained himself to use it over the course of a weekend, then started using it within a day. After moving his current visit templates into the product, he started using it first with simple patient cases, then migrated to those that were more complicated. It ultimately took Dr. McAleer about a month to get “up to speed,” comfortably using the product and its encounter templates to create her patient notes electronically between patient visits.

Each physician cited a number of qualitative benefits they achieved in using the product:

- Referring physicians get clearer consultation notes much sooner than they did before;
- Encounter notes provide better information for billing, with more accurate coding; and
- The ability to search aggregate patient data and the overall chart quality for audits has improved.

Both Dr. McAleer and Dr. Landa achieved measurable results as well: She eliminated \$600 a month in transcription expenses, more than covering the monthly cost of the product. Likewise, he was able to gradually decrease his transcription costs from \$1,000-\$1,200 per month to just \$50 per month over a six-month period. In both cases, their practice partners have yet to sign on to using IT, but they each acknowledge that using such a focused product can make a measurable difference. “Especially for a small practice,” says Dr. McAleer, “this is a good program to get started with. Changing the practice routine is difficult, but in the long run, my charting is better.”

## Implementing an EMR in a Solo Practice

### Case Study 6

Lee Hamilton, M.D.  
Yreka, CA

*Challenge:* Eliminate paper

*Solution:* Logician EMR from GE Medical Systems (formerly MedicaLogic)

*Results:* Lower per-visit costs and better patient management

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### Case Study 7

Armand Gonzales, M.D.  
Riverpoint Pediatrics  
Chicago, IL

*Challenge:* Track essential patient information and complete charts

*Solution:* EncounterPRO EMR from JMJ Technologies

*Results:* Higher income from improved productivity and office efficiency

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Even solo practicing physicians are now turning to EMR systems to manage the complex clinical information associated with their patient panels. These physicians have been able to minimize their overhead costs while maintaining or even improving the care and service they provide to their patients.

*The hardware side of the equation was not a bitter pill to swallow and I recouped that cost in six months.*

Dr. Lee Hamilton is a solo physician who recently restarted his practice in Northern California. He had worked for five years in clinics, urgent care, and emergency departments, and witnessed the complicated paper flow that took place in these settings. “I wanted to look at a better way to practice medicine,” he stated, “without the burdens associated with paper charts.” Not only could it take up to an hour to find a patient’s medical record in these prior situations, but the financial burden associated with maintaining paper records seemed too great for him. He learned that the average family practice physician spends at least \$20,000 per year dealing with the paper associated with medical records. “I wanted to provide the best quality care I could while reducing the financial burden” of paper records, he said. After looking at about six products in the marketplace and preparing a business plan and financial model, he selected MedicaLogic’s Logician product.

Dr. Armand Gonzales had similar challenges. He had taken his practice back from the hospital in 1999 and, as a solo practitioner, did not have the resources to effectively keep track of all the clinical details for every patient and complete the necessary documentation. He’d had some experience with a computerized billing system dating back to 1980, but that system “was complicated and had lots of glitches.” Then, in early 2001, he selected an EMR product (JMJ Technologies’ EncounterPRO) at a trade show. With the help of his wife (an MBA) and a financial consultant, Dr. Gonzales prepared a budget that projected his practice income against his expenses—including three years of monthly payments for the bank loan he would use to purchase the system. He realized that implementing this technology could work.

*I’d advise an absolute commitment to an EMR as the only way to go to provide good care. I don’t think you can justify keeping paper records anymore.*

While implementation of these systems was not complicated, both physicians had to uncover the resources to make it happen. A self-described computer literate, Dr. Hamilton completed the local installation of the computer hardware himself. He chose Dell because of its quality and customer support. “The hardware side of the equation was not a bitter pill to swallow,” he said, “and I’ve already recouped that part of the cost in six months.” With the support of his software vendor, the entire implementation was completed within four weeks of signing the contract.

Dr. Gonzales hired a local technician to wire his office with computers before the vendor came in to complete the software installation and conduct three to four days of training for himself and his three full-time employees. Both physicians currently pay a monthly license fee to their vendors for maintenance and support.

What have they achieved for their investment? Dr. Hamilton realizes practice expenses that are 20 to 30 percent less per visit than he would have experienced otherwise were it not for his EMR. Dr. Gonzales has a different perspective: With his EMR, he is able to see personally the 600 patients per month (and up to 40 per day) that he and his part-time practice partner were previously seeing together—and his income is up over 50 percent. “In this era,” he said, “it’s a mistake not to have some kind of EMR and billing system in your practice.” Dr. Hamilton feels similarly: “For new starting practices, I’d advise an absolute commitment to an EMR as the only way to go to provide good care. I don’t think you can justify keeping paper records anymore.”

### III. Lessons Learned: What the Case Studies Reveal

*A few physicians saw IT as the panacea for a whole range of problems they were experiencing.*

WHAT DO THE CASE STUDIES COLLECTED FOR this report and described in the previous chapter reveal about the use of technology in small physician practices? In beginning the analysis, it became clear that all the case study experiences share four common themes:

1. *A specific problem was targeted.* Practices interviewed for this report were usually focused on a specific problem when they selected their IT product. While not every practice chose the same challenges to address, they all chose something—and the scope, complexity, and type of problem the practice tackled shaped the characteristics of their solution.
2. *Some technologies can address multiple problems.* The case study interviews revealed that some products can be used to tackle different problems. Even the easier-to-implementation, single-function products demonstrated success in addressing different types of problems that small physician practices face.
3. *The physician was the principal catalyst for change.* In several cases, a highly motivated, technology-savvy physician drove a definitive process for introducing IT to the practice to solve challenges. In other instances—often where the challenges were less pressing and the staff’s pain less severe—more casual, inquisitive exploration of technology by a practice physician led to the gradual introduction of a new product.
4. *Real benefits were achieved.* Substantive benefits were achieved using IT to address the challenges facing small physician practices. However, the level of benefit realized was contingent on the complexity of the problem they chose to target and the sophistication of the IT tool they used. Single-function, standalone tools did address some of the focused challenges of some practices, but the benefits were less measurable.

This chapter describes these four common characteristics in further detail and how to begin using IT.

## A Specific Problem Was Targeted

The types of problems addressed varied by practice; some were narrowly focused while others were expressed more broadly. The complexity of the problem that each practice chose to tackle depended on the level of frustration experienced and the practice's tolerance for managing change.

Dr. Nissanoff, in Case Study 1, wanted to make appointment confirmations easier. In Case Study 2, Dr. Murphy needed easier access to drug information. Effectively managing paperwork was a bigger problem that led many small physician practices to select and install an IT product.

Many small practices cited the negatives of paperwork and paper-based charts as their principle reason for turning to IT. Typical comments among the doctors interviewed included: "I could never get ahead of the paper"; "There was no way for me to keep track of everything and write my charts...I couldn't afford to stay in paper"; and "We ran out of chart storage space in the office."

Practices didn't necessarily address their challenges in the same way, however. Differing approaches to the paperwork burden provide examples. One specialty practice used a document imaging product to convert all its incoming paper-based information to electronic form. Another practice employed a Web-based electronic messaging product that delivers clinical information such as laboratory results, radiology reports, and transcribed notes that are already in electronic form from outside sources to the physicians' desktop for review. The information is stored in the product's repository for future access, thereby creating a virtual medical record. While the practice lacks some of the additional capabilities that an EMR product might provide, their current solution measurably reduced the incoming paperwork.

*"If I had to do it all over again, I'd first identify the problems I wanted to solve, then undertake the analysis to determine the potential benefits."*

—A urologist in a seven-physician specialty practice

Several practices instead chose an EMR product to address the challenges of paperwork. That was partly Dr. Hamilton's goal (Case Study 6). In at least one other small physician practice interviewed for this report, an EMR product accepts external documents directly via fax, scans patient documents at the practice site, and transmits documents and prescriptions via fax to other physicians and pharmacies—all while delivering other functionality typically found in an EMR. This physician was willing to invest additional up-front resources to convert his paper records and to adjust his mode of practice to incorporate the new technology (see sidebar).

In addition, while most physicians cited a specific, focused problem they sought to address, a few saw IT as the panacea for a whole range of problems they were experiencing. The physician restarting his practice in Case Study 6 "wanted to look at the right way to practice medicine" and saw IT as the way to do that. Another physician actually set out to "uncover the ideal IT solution," implying that one product might solve all of his problems. As the case studies show, a physician's interest in technology and the practice's tolerance for change are factors in the decision about which IT solution to pursue.

### Using an EMR to Tame Paperwork

In an effort to get out from under the mountain of paperwork he experienced for 22 years in practice—and to make laboratory results and charts easier to find—Dr. Shashida Acharya, who describes himself as “not very computer-savvy,” selected the AlteerOffice EMR product after attending a few conferences and visiting with another physician user. Though he admits that no small effort was required to convert his paper records, in doing so he eliminated the administrative hassles of finding patient charts, refilling prescriptions, and following up on test results. The doctor personally saves 1 to 1.5 hours at the end of each day, which he uses to complete paperwork. In addition, he no longer pays his staff overtime to stay late. He figures that the product (with associated hardware) paid for itself in two years—one year ahead of schedule.

### Some Technologies Can Address Multiple Problems

While nearly all the practices interviewed for this report applied IT to solve specific challenges, it became clear that some IT products can solve multiple problems. For example, one product allows physicians to create structured patient notes electronically, then subsequently retrieve them via the Internet. Two different practices used this same product to address different challenges they faced. Case Study 4 describes how Dr. McAleer was motivated to use IT to reduce her transcription costs. In Case Study 5, Dr. Landa chose the same product to improve his visit notes—making patient information clearer and easier to access—and to code the encounter more accurately. In the end, like Dr. McAleer, he saved money, too, by gradually reducing his transcription costs over a six-month period.

Similarly, EMR products are now being used by an increasing number of small physician practices, though the reasons each practice selects such a product vary widely. Typical challenges that interviewees were attempting to address through EMR use included:

- Locating medical record charts;
- Quickly accessing relevant patient information;
- Reducing paperwork; and
- Improving and maximizing visit coding (often to address managed care requirements).

In Case Study 6, Dr. Hamilton chose an EMR to improve access to patient information and reduce his reliance on paper-based records. In Case Study 7, Dr. Gonzales needed to manage the increasing number of clinical details in his practice and make documentation easier. A physician practice in New Jersey implemented an EMR because the documentation in its patient records was inconsistent—which made finding relevant clinical information difficult. They also realized their physicians were not coding patient visits properly—and that an EMR would give their physicians better real-time tools for coding support than any amount of classroom education in how to properly code a visit. Said one solo physician, “Ninety percent of why I implemented an EMR was due to managed care coding requirements and potential fines for over-coding.” Each of these physicians used an EMR to tackle a different problem and achieved different results.

## The Physician Was the Principal Catalyst for Change

It is typically the physician in a small practice—rather than administrator—who is most involved in the decision to introduce IT systems into the practice<sup>7</sup>, so it is nearly always those practices with at least one technology-inclined physician that are adopting IT. Not surprisingly, the level of interest in and experience with IT varies among physicians, as does their appetite for introducing technology that might change the practice.

*“I wanted to be able to sleep at night.”*

—Physician concerned with potential fines for over-coding, who now uses an EMR

In many cases, small practices reached an intolerable level of frustration from a challenge they faced, then sought out IT to help relieve the pain. For other physicians, it didn't even matter that the practice wasn't explicitly looking to solve a particular problem; simply being exposed to technology was what got them interested in it.

Exposure to technology occurs in a number of ways. In several cases, the IT product a practice selected was based on the sponsorship or endorsement of an umbrella organization such as an independent physician association (IPA), an affiliated medical center, or a community-based initiative. One urologist interviewed for this report discovered the electronic notes-writing product he uses through the hospital to which he admits patients. Another physician uses a Web-based messaging product that was prevalent in his community. Not uncommonly, physicians in one practice are introduced to a certain product because they know a neighboring physician who uses it.

The selection of an IT product can often be driven by the practice's willingness or ability to absorb the associated changes. One practice implemented a document imaging solution that gave them easy access to patient information but didn't require physicians to type at a keyboard during patient visits and allowed the practice to electronically capture and store all the outside paper it receives each day. In this instance, the need was identified as easy, reliable access to patient information; an important attribute of the solution was minimal involvement of physicians in data entry.

If the practice's appetite for IT is more significant, a mutually beneficial relationship can develop between the practice and its vendor. Several physicians commented that their early adoption of a certain product helped the vendor improve that product's capabilities. In some cases these physicians not only became supportive spokespeople for the product but they enjoyed privileges such as reduced pricing and a bigger role in product enhancements for being early adopters or providing pilot sites. Still, it was the physician in nearly all cases who was the agent of change for introducing technology to the practice.

## Real Benefits Were Achieved

All of the small physician practices interviewed for this report were able to achieve some benefit by implementing IT. The level of benefit and the way they measured it varied significantly. Some expressed benefits in anecdotal terms; typically, these included:

- Less time was being invested in locating and assembling patient information and producing clearer documentation;
- Important details about patients were being attended to more reliably and patients were receiving better service and care as a result;
- Up-to-date drug information was easier to obtain;
- Patient prescriptions were generated more efficiently; and
- Workflow improved overall.

Many practices revealed *qualitative* results that convinced physicians and managers the investment had been worthwhile. Whether or not they have been able to invest the time to measure the benefits they've achieved, they know their practice is better for it.

*“Even though electronic prescribing takes me longer than writing paper prescriptions, we no longer have to pull charts and the prescription is electronically routed so we’re ultimately saving up to two hours per physician per day in medical assistant time.”*

—Physician

Dr. Murphy (Case Study 2), who uses a hand-held product to improve his access to drug information, suspects he's improved the quality of care he delivers. Dr. Rice (Case Study 3) uses a slightly more advanced IT tool to actually create prescriptions electronically; he appreciates the automated drug warnings and multi-lingual educational printouts he can now provide to patients—but can't cite tangible cost savings. Other physicians using electronic prescribing tools have also touted their benefits—even if they are not readily measurable (see sidebar).

*“I’m not sure that it saves me time but it does make my notes much better—and I can treat patients more effectively because I have access to better record-keeping.”*

—Physician using EMR product

On the other hand, a number of small physician practices were able to describe *quantitative* results they had achieved through implementing IT. Even if they had not initially set out to evaluate their success, several were able to cite quantifiable benefits. Typically, these included:

- A measurable reduction in the amount of paper received;
- Recovery of previously lost revenue and/or an increase in the practice's revenue;
- Increased physician productivity (measured in patients seen per day);
- Reduction of staff FTEs or increased productivity and capacity of current staff; and
- Reduced per-visit costs.

### E-Prescribing As a Solution

In his quest to find an IT solution for his solo OB/GYN practice, Dr. Edward Zabrek, the former IT chairman at a large not-for-profit health system, turned to Allscripts. He knew the potential benefits of using a handheld prescription-writing product, having used a now-defunct one in the past, and hasn't yet found an EMR product he likes. He now has better electronic access to information with this more focused product and a better handle on drug allergies, interactions, and formulary decisions. Plus, "patients want physicians who are keeping up with [the latest information]," he maintains, "and they feel more confident with the legibility of my prescriptions and my use of technology." Although Dr. Zabrek hasn't observed time savings, he says the prescription writing tool is time neutral.

In one specialty practice, the director shifted his medical records staff to accomplish other tasks and was able to increase the number of physicians in the practice without adding more staff. Dr. Hamilton (Case Study 6) lowered his per-visit expenses using an EMR. In Case Study 7, Dr. Gonzales can see more patients and has increased his practice revenue using an EMR.

Sometimes the benefits from using IT represent trade-offs among different staff. An EMR might make the overall practice more efficient and ultimately save money, for example, but implementing the product might mean physicians spend more time completing tasks themselves—even though they do so more efficiently than they did in their previously paper-based practice.

*"Our practice realized a 15 to 20% increase in overall bottom line revenue after six to nine months."*

—COO of a physician practice using EMR product

### How to Begin Using IT

As the case studies have illustrated, many effective IT solutions exist for small practices seeking to address both specific and broader challenges. The new range of IT products and tools available and recent advances in Internet-based capabilities have increased the options for these practices, but have also made the choices more difficult. How do physician practices decide where to start?

*"I wanted to get rid of the paper chart but didn't want to wait ten years for an EMR product that could do that."*

—Physician in a specialty physician practice using a document scanning and imaging product

In considering solutions to existing problems, small physician practices need to consider not just the initial level of change they can sustain but the practice's likely long-term level of investment in information technology and the benefits it may desire at some later time. The practice's vision and future plans do become important. In cases where physicians' appetite for investing in IT and tackling the associated change is initially high, practices often pursue robust products like an EMR right from the start. In other cases where the level of pain experienced by the practice is not sufficient to drive the practice to invest in robust tools requiring widespread change, practices may opt for simpler and seemingly less disruptive tools—at least to start. Anticipating future IT needs up-front can be beneficial, however, as practices set out to make their initial investment.

## IV. Guide to Finding, Selecting, and Implementing the Right Products

*“I wanted to use a computer at the point of care without changing my practice style—and [this product] was a wonderful bridge to more advanced capabilities.”*

—Solo physician using a handheld prescription writing product

USING THE EXPERIENCES OF PRACTICES INTERVIEWED for this report, this chapter reviews the types of tools that are currently available in the vendor marketplace and offers advice on how to locate, choose, and install them.

### A Quick Review of IT Tools

A good starting point for understanding the marketplace is looking at the tools that are packaged in different ways, since the benefits that can be achieved are related to the type of product or tools employed.

Many of the IT tools for small physician practices are available as either standalone functionality or in combination with others. Some functionality previously available only through the use of an EMR or practice management product can now be purchased separately, giving the small physician practice a number of easier-to-implement options. For example, some of the newer “EMR-lite” products are largely focused on documenting the clinical encounter; similarly, new handheld products focus solely on helping the physician select the right medication or visit code. In addition, some of the more comprehensive multi-tool products like EMRs are now modular, allowing practices to “pick and choose” which capabilities they wish to implement first and adding more functionality as the practice’s level of comfort with technology grows and additional benefits are desired.

The IT tools and products now available can be categorized as financially focused, clinically focused, and patient focused.

### Financially Focused Tools

While many practices already have some form of IT to support their financial practice management functions, new options have emerged. Charge capture and coding assistance have been brought closer to the physician through the use of handheld devices that increase the accurate and complete capture of visit information. New practice management systems offer Web-hosted solutions that decrease the up-front purchase costs and minimize ongoing IT management issues. Though not reviewed for this report, a number of vendors now offer online capabilities for conducting key payer-based transactions such as member eligibility, referral/authorization, and claims submission.

## Clinically Focused Tools

Traditional EMR products in the marketplace—typically offering a wide range of integrated clinical and decision support tools—have been joined by simpler, more affordable EMR products that provide basic functions such as prescription writing, problem list management, and notes writing. Some are also available in a Web-hosted environment, bringing them more into reach for smaller practices. Capabilities previously found only in EMRs (such as drug reference and prescription writing) can now be purchased as standalone functionality for handheld devices at a lower cost. While these products may not achieve the breadth of measurable benefits that a full EMR can, some small physician practices have still found benefits in their use.

*“I saw this product as the stepping-stone to a more complete EMR.”*

—Solo physician using a Web-based product that delivers test results and clinical messages to an electronic in-basket for his review

Some Web-based vendors are now offering transcription and visit documentation capabilities that can replace, or at least support transition to, the use of an EMR. Document scanning, for example, has been shown to achieve some of the benefits of a full EMR without the requirement that physicians themselves enter fully structured documentation. Furthermore, document scanning and faxing capabilities built into EMR products can increase office efficiency and reduce the practice’s reliance on paper. And with Web-based capabilities for ordering laboratory tests and managing the results, some physicians have been able to more effectively address many of their paperwork and information-tracking needs.

## Patient Focused Tools

As patients increase their involvement in their care, small physician practices may want to employ tools that help manage patient flow and meet their patients’ expectations. Telephone management systems for small businesses—including physician practices—can more efficiently triage and direct incoming telephone calls. Some vendors are offering new ways to telephonically remind patients of upcoming visits or care they might need, as well as mechanisms to facilitate communication via the Internet between patients and their physician practices. Newer Web-based capabilities for patients requesting appointments and prescription refills are just now appearing in the vendor marketplace. Surprisingly, these patient-focused products actually reap financial savings for the small physician practice when they perform routine administrative tasks that would otherwise require support staff time. Table A-1 in Appendix A describes these IT tools in greater detail.

*“Patients have commented on how easy it now is to get their test results, even after-hours or when they’re traveling.”*

—Manager of a two-physician practice using a telephone messaging and reminder system

## Key Considerations

In the case studies collected for this research, practices choosing between single-function and more comprehensive IT solutions had to consider their capacity for investing in IT and the associated workflow change or disruption, as well as their anticipated needs for the future. Their experiences suggested:

- Standalone IT tools can produce value to the small physician practice.
- Implementing a greater number of IT tools—especially those supporting documentation and physician workflow—requires more planning and causes more disruption during implementation than does tackling fewer IT tools or only those that primarily affect support staff and patients.
- However, the more IT tools a small physician practice implements, the greater the achieved benefits are likely to be.

This last point highlights the importance of considering where the practice would like to be relative to technology and practice improvements at a point in the future. Even when a practice's tolerance for change is initially low, selecting a product that offers a wider range of capabilities will better support its interest in achieving greater benefits later—even if only small modules of that product are implemented at the start.

*“Free [technology] may not be worth it if it takes me more time to use.”*

—Physician

The research also showed that complete integration of a practice's different IT tools is not essential to start; standalone IT tools can provide benefits to the small physician practice. For example, the case studies showed that a physician using an electronic drug reference application on a handheld device can readily implement the product with very little planning and minimal impact on support staff; however the benefits achieved will markedly improve when the physician uses more sophisticated e-prescribing capabilities—especially when they are integrated with electronic patient records.

When more tools or products are employed, integration of them becomes essential because stand-alone tools can't otherwise take advantage of patient information captured and stored elsewhere, thus requiring duplicate data entry. The significance of technology integration is that without proper planning, a small physician practice could potentially employ a number of discrete, un-integrated IT tools that don't communicate with each other or with outside entities. Beyond the inefficiencies and workflow challenges this places on the physician, the use of multiple un-integrated IT tools can mean that practice staff must enter basic patient information into multiple systems, introducing potential errors in the process, causing staff rework, and decreasing overall efficiency in the practice. In addition, vendor support, training, and system upgrades all become more complex with multiple vendor relationships. When a single electronic source for patient information is employed throughout the practice, rework is diminished and the benefits achieved increase measurably (see Figure 1). Standalone products offer more capabilities; more advanced IT capabilities are available only with a higher level of product integration—and typically, at higher cost.

**Figure 1. Continuum of Products and Range of Possibilities**

	Basic Capabilities <i>Standalone Product</i>	Moderate Capabilities <i>Moderate Level of Integration</i>	Advanced Capabilities <i>High Level of Integration</i>
<b>Charge Capture and Coding</b>	Electronic coding assistance	Electronic charge capture	Electronic charge capture: With electronic transmission to payers <i>and/or</i> integration with EMR documentation
<b>Prescription Writing</b>	Electronic drug reference	Standalone e-prescribing with alerts	e-prescribing: With electronic transmission to pharmacy <i>and/or</i> integrated with an EMR
<b>Documentation</b>	Document scanning	Voice recognition and transcription Structured documentation	Structured documentation as part of an EMR

In addition, several of these tools require a higher level of integration (with other systems, within the practice, or with external entities) in order to be effective. Electronic transmission of prescription information, for example, requires the use of a vendor with electronic connections to the key pharmacies that a practice’s patients use. While this essential capability is available from a few e-prescribing vendors, the integration required to seamlessly transmit and receive laboratory and diagnostic orders and test results is available in even fewer IT vendors.

### Finding a Product

The practices interviewed for this report disclosed a number of means by which they found or selected a vendor partner.

- Check with a larger umbrella organization to which the practice may belong (such as an Independent Physician Association, or IPA, an affiliated hospital or a neighboring medical center). Its sponsorship of an IT product may provide a ready-made decision—plus use of the same product by a larger community of physicians can be helpful for exchanging information.

- Talk to local and national colleagues who may have positive experience with a specific vendor.
- Contact national professional organizations. The American Academy of Family Physicians (AAFP) and the Medical Group Management Association (MGMA) both offer good resources on selecting a vendor. (See Appendix C for more details on these organizations.)
- See Table A-2 in Appendix A of this report for a starter listing of vendor products.
- The practices cited two key factors in making their product selection: price and the perceived ease-of-use by physicians.

In several cases, the ultimate decision came down to the cost of the product. “This particular product was affordable,” said one solo practice physician user. Small physician practices may have to select a more narrowly focused vendor product over one with richer capabilities—despite the challenges they wish to address—because the price tag for the richer product is too high. Most vendors with modular products, however, offer modular pricing.

How each product fits into the practice's workflow and its impact on physician users is the other crucial consideration in selecting a product for many practices. How a physician uses a particular product to document a patient visit, select an appropriate billing code, or obtain patient information, can vary considerably in terms of screen layout and flow—and physician users are generally the best judges of which tools they can realistically use. Spending more time using technology may not pay off for busy physicians—even if there are measurable benefits to doing so—if a product is difficult for them to use or if the benefits accrue to someone else (such as support staff or patients). A product's ability to effectively address the practice's problems without detrimentally affecting the physician's workday is essential.

### Implementation Factors

The implementation challenges that the case studies revealed can be categorized as follows: budget planning, financing, and hardware purchase/installation.

#### Budget Planning

The fact that many of the products available have both lower costs and purchasing options that avoid a big up-front investment makes it easier to justify investments. In fact most practices interviewed for this report did not undertake a formal return-on-investment analysis before buying their product.

Most small practices do not have the resources to undertake a complex financial analysis on their own. One interviewee did prepare an initial budget with his wife (an MBA) and then hired a consultant to compare his projected income with the anticipated lease payments. Another physician prepared a business plan with a financial model at the start of his practice to confirm that he could afford his new EMR system. In any case, an abbreviated financial comparison of the anticipated costs and benefits is probably warranted. Below are some key questions to consider in making a quick or preliminary financial analysis.

- **Costs.** What is the initial cost of the vendor's *software* product? What will the necessary *hardware* components cost? What will the *ongoing costs* be—for both the software vendor and for any anticipated maintenance or support for the hardware?
- **Savings.** Are there any anticipated *savings* that the product will deliver?
- **Bottom line.** Can the practice afford the *costs* (see also the next section on Financing) minus the *savings* in its monthly operating budget?

#### Purchasing and Financing

In many of the case studies, the up-front costs for hardware and software were small enough that the practice was able to complete the purchase outright. In other instances, the purchase price was partially or fully funded by a third party such as a pharmaceutical company, a hospital or delivery network, or the vendor itself. Practices should also investigate funding through grants (such as the Tides Foundation) or health plans (who may sponsor products for disease management).

In several cases (particularly for EMR products), practices interviewed for this report needed to undertake alternative means for financing the up-front purchase of either the software, the computer hardware, or both. They used a number of financing methods:

- A lease buy-back program with the vendor (typically of three years' duration);
- A bank loan with the practice as collateral (also typically over three years); or
- Tapping into the practice's revolving line of credit at their bank.

These practices simply incorporated the regular lease or loan payments into their monthly operating expenses. In at least one case, savings from the use of the product helped pay off the loan earlier than projected.

### Hardware Procurement and Installation

With continued competition among PC manufacturers and decreasing costs of computing power, small physician practices have a number of options for purchasing or leasing hardware. The IT software vendor typically makes recommendations for the computer equipment that will be required. Small physician practices can then turn to several sources to purchase the hardware:

- A local computer retailer (like CompUSA);
- An online or catalog computer distributor (like MicroCenter); or
- PC manufacturers themselves (like Compaq, Dell, or Gateway—all of which have online sales).

PC equipment—like the software itself—can also be leased rather than purchased outright. AMEX Financing, City Capital, and GM Leasing were cited by one practice administrator as leasing organizations that finance health care equipment purchases.

The installation process has its own challenges. While the most IT-savvy physicians interviewed for this report were able to complete the installation on their own, this is not always the case.

The practice representatives interviewed for this report suggested several resources for help in installing computer hardware and network connections:

- A few IT vendors will assist their clients with some of the basic hardware installation (though most will not).
- Most local computer retailers have their own IT contractors who can assist customers with hardware and network installations.
- Some practices have ready access to a local “computer guru” who may have installed their original hardware and/or network and is available for ongoing maintenance and support. Ask about local resources at nearby practices that already have IT.

Finally, several of the IT products for the small physician practice require high-speed access to the Internet. If that is the case—as it was for several of the case study settings—practices can look to a local Internet service provider (ISP) or their local telephone or cable operator; many of these are now offering DSL or broadband access to the Internet, particularly in urban and high-population suburban areas.

*Installing an EMR “is not painless. It requires extra time; you need to plan the project and then lighten your schedule.”*

—Physician in a four-provider practice using PMSI's Practice Partner product

# Appendix A: IT Tools and Sample of Vendors

## IT Tools Available

Table A-1 reviews the array of IT tools currently available in the marketplace to the small physician practice. They have been categorized as financially focused (related to reimbursement), clinically focused (related to patient care), or patient focused (related to patient communication or support). The table also describes how these tools can be used by small physician practices to address the challenges they face.

## Sample of IT Vendors

Table A-2 displays specific IT products available from some vendors. The list below is not an attempt to identify all of the vendors offering IT products for the small physician practice market or to endorse any particular vendor products (though the listing only includes vendors who have implemented their products in small physician practices). Instead, this represents a sample of the vendors uncovered and contacted for this report, and can serve as a useful starting point in thinking about available products. Information was obtained directly from vendors and was believed to be accurate as of early spring 2002, but purchasers should undertake their own thorough investigation of each company and its products' capabilities, affordability, and fit with practice goals and resources. Keep in mind that the vendor marketplace is evolving rapidly. Each vendor has a different history, business model, and track record in the small physician marketplace, and vendors often introduce and discontinue products with little notice.

**Allscripts Healthcare Solutions: TouchWorks™**  
www.allscripts.com, (800) 654-0889

**Alteer: Alteer Office**  
www.alteer.com, (949) 789-0500

**Amicore: Amicore Clinical Management**  
www.amicore.com

**Axolotl: Elysium, Private Patient Portal**  
www.axolotl.com, (800) 461-7724

**Berdy Medical Systems: SmartClinic®**  
www.berdymedical.com, (800) 66-BERDY

**ePhysician: ePhysician Practice**  
www.ephysician.com, (650) 314-2000

**ePocrates: ePocratesRx, ePocratesRx Formulary**  
www.epocrates.com, (650) 592-7900

**GE Medical Systems Information Technology (formerly MedicalLogic): Logician**  
www.gemedicalsystems.com, (800) 322-5538

**Healinx: Healinx**  
www.healinx.com, (510) 654-6181

**InfoMedx: iRetrieve**  
www.infomedx.com, (206) 528-2003

**JMJ Technologies: EncounterPRO**  
www.jmjtech.com, (800) 677-5653

**MDEverywhere: ClearCoder**  
www.MDEverywhere.com, (919) 484-9002

**MediNotes: Charting Plus**  
www.medinotes.com, (877) 633-6683

**Perfect Practice: Practice Manager MD**  
www.perfectpractice.md, (800) 825-0224

**Physician Micro Systems Inc.: Practice Partner**  
www.pmsi.com, (800) 770-PMSI

**SmartTalk: SmartReminder, LabTalk, SmartHealth, SmartSurvey**  
www.smarttalk.com, (888) 415-9001

**TeleVox: HouseCalls, LabCalls**  
www.televox.com, (800) 644-4266

**Webley Systems: CommuniKate Virtual Assistant**  
www.Webley.com, (888) 444-6400

**Table A-1. Types of IT Tools Currently Available in the Vendor Marketplace for Small Physician Practices**

			Declining Revenue	Paperwork Challenges	Complexities of Clinical Care	Increased Patient Involvement
IT Tool	Brief Description	Use	Challenges Addressed			
<b>Financially Focused</b>						
Coding assistance	Reference or advice for accurately coding the patient visit	Used by physician as reference while coding patient visit, or tool actively guides physician towards appropriate visit code	X			
Electronic charge capture	Electronic means for recording the appropriate level of service (E&M code) and other activities performed during the patient visit (CPT codes); can be standalone capability or integrated with the process for documenting the clinical visit itself	Used by physician/clinician during or at the completion of the patient visit	X	X		
Electronic payer connectivity	Electronic capabilities for transmitting claims-level information from patient visits directly to insurers	Behind-the-scenes capability often provided by the Practice Management System	X	X		
<b>Clinically Focused</b>						
<b>Electronic documentation</b>						
Transcription and voice recognition	Employed by a growing number of off-site IT vendors to translate large bodies of spoken dictation about the patient visit into unstructured, printable text	Used behind-the-scenes by vendors supporting physician documentation		X		
Document scanning and imaging	Electronic scanning and cataloging of a written or printed image for future viewing on a PC; can be information internal or external to the practice	Used by medical records/ clerical staff to scan paper-based information for the patient record		X		
Electronic documentation	Tools for capturing discrete, structured data elements from the patient visit for easy future research	Used by physician while documenting patient encounter	X	X	X	
Electronic team messaging	Electronic means for securely communicating between physician office staff about patients and related tasks; usually only included in an EMR	Used by physician office personnel			X	
<b>Test results and reporting:</b>						
Electronic lab order entry	Electronic means for ordering laboratory and other tests; can include prompts and reminders that guide physician ordering decisions; usually only included in an EMR	Used by physicians ordering laboratory and other diagnostic tests			X	
Electronic routing of test results	Electronic transmission of laboratory tests and other results back to the ordering physician	Retrieved by physicians who have ordered laboratory and other diagnostic tests			X	

**Table A-1. Types of IT Tools Currently Available in the Vendor Marketplace for Small Physician Practices (continued)**

IT Tool	Brief Description	Use	Declining Revenue	Paperwork Challenges	Complexities of Clinical Care	Increased Patient Involvement
			Challenges Addressed			
<b>Clinically Focused</b>						
<b>E-Prescribing:</b>						
Drug reference	Electronic access to drug information	Used by prescribing physicians			X	
Drug alerts and formulary checking	Electronic messages that warn physicians of potential drug interactions, side effects, and non-formulary medications	Used by prescribing physicians			X	
Electronic prescription refills	Easy means for electronically generating a refill for a patient with a past prescription	Used by prescribing physicians; often initiated by office support staff		X	X	
Electronic transmission	Electronic transmission of prescription information directly from the application to a pharmacy, oftentimes by fax	Behind-the-scenes capability provided by e-prescribing and EMR applications		X	X	
<b>Clinical decision support:</b>						
Point-of-care decision support tools	Electronic messages that guide physicians in making decisions about patient treatment	Used by physicians at the point of care			X	
Patient Registry and outreach reports	Tools for tracking patients in certain disease categories and monitoring their treatment	Used by physicians either at the point of care or retrospectively			X	
Practice analysis and reporting tools	Tools for analyzing and understanding how clinical services are used by a practice's patient panel	Used by physicians and practice managers	X		X	
<b>Electronic Medical Record (EMR)</b>	Can be a combination of any of the above clinically focused IT tools	Used by physicians and office staff at the point of care	X	X	X	
<b>Patient Focused</b>						
<b>Incoming call routing and management</b>	Electronic triage of incoming telephone calls that directs patient to best options; can be personalized by practice	Installed and managed by practice manager or lead staff person				X
<b>Telephone-based patient appointment reminders</b>	Telephonic means to automatically notify patients of upcoming appointments; can also be used for announcements such as a practice's new location	Installed and managed by practice manager or lead staff person			X	X
<b>Automated delivery of test results</b>	Notification to patients of test results via secure telephone message box	Managed by practice manager or lead staff person under direction of physician(s)		X	X	X
<b>Telephone-based patient reminders for health maintenance</b>	Telephonic means to automatically notify patients of the need for required follow-up (such as pap smears, mammograms, or immunizations)	Managed by practice manager or lead staff person under direction of physician(s)		X	X	X
<b>Electronic patient messaging</b>	Secure electronic means for physicians and patients to communicate asynchronously; also provides documented record of communication	Used by physicians and office staff		X		X

Source: First Consulting Group

**Table A-2. Representative Sample of IT Vendors for the Small Physician Practice**

	Practice Management & Coding		EMR and "EMR-Lite" (including those with practice management/coding and e-prescribing functionality)										E-Prescribing		Telephone & Patient Messaging			
	MDEverywhere	Perfect Practice	Allscripts	Alteer	Amicore	Axolotl	Berdy Medical Systems	GE Medical Systems	InfoMedX	JMJ Technologies	MediNotes	PMSI	ePhysician	ePocrates	Healinx	SmartTalk	TeleVox	Webley Systems
Web-based ASP		X	X	X	X	X	X		X	X		X	X	X	X	X	X	X
Handheld devices	X	X	X	X	X	X		*	X		X	X		X				
<b>Financially Focused</b>																		
Coding assistance	X		X	X	X		X			X	X	X						
Electronic charge capture		X	X	X	X	X	X			X	X	X	X					
Electronic payer connectivity		X	X	X	X	X						X						
<b>Clinically Focused</b>																		
Electronic documentation:																		
Transcription and voice recognition			X	X	X	X	X		X	X	X	X						
Document scanning and imaging		X		X	X		X	*	X	X	X	X						
Electronic documentation			X	X	X		X	X	X	X	X	X	X		X			
Electronic team messaging			X	X	X	X	X	X	X	X	X	X						
Test results and reporting:																		
Electronic lab order entry					X	X	X	X	†	X	X	X						
Electronic routing of test results				X	X	X	X	X	X	X	X	X						
E-Prescribing:																		
Drug reference			X	X	X	X	X	X			X	X	X	X				
Drug alerts and formulary checking			X		X	X	X	X		X		X	X	X				
Electronic prescription refills			X	X		X	X	X		X	X	X	X					
Electronic transmission			X	X		X	X	X		X		X	X					
Clinical decision support:																		
Point-of-care decision support tools			X				X	X		X	X	X	X	X				
Patient Registry and outreach reports							X	X	†	X		X						
Practice analysis and reporting tools		X	X	X	X		X	X		X	X	X	X					
Electronic Medical Record (EMR)			X	X	X	X	X	X		X	X	X						
<b>Patient Focused</b>																		
Incoming call routing and management																	X	X
Telephone-based patient appointment reminders																X	X	
Automated telephonic delivery of test results																X	X	
Telephone-based patient reminders for health maintenance																X	X	
Electronic patient messaging								X						X	X	X		

Source: Information compiled by First Consulting Group as provided by vendors.

\* Via solution partner. † Scheduled for release June 2002.

## Appendix B: Contributors

A large number of individuals graciously contributed their time to share with us their experiences using information technology in the small physician practice. We appreciate their insight and wisdom.

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## Appendix C: Resources

A number of organizations, societies, and trade journals provide good resources for physicians in small practices seeking help with information technology.

### IT-Focused Organizations

American Medical Informatics Association (AMIA) publishes monthly informatics journal with frequent articles on computer-based patient records ([www.amia.org](http://www.amia.org)).

Computer-based Patient Record Institute (CPRI-HOST) produced a number of early resources on computer-based patient records and sponsors annual award for excellence in implementation of a computer-based patient record system ([www.cpri-host.org](http://www.cpri-host.org)).

Health Information and Management Systems Society (HIMSS) provides IT professionals a quarterly journal on IT (*Journal of Healthcare Information Management*) and an annual conference with a large vendor exhibition ([www.himss.org](http://www.himss.org)).

Toward an Electronic Patient Record (TEPR) produces survey of trends and usage of electronic health records plus sponsors an annual conference showcasing IT vendors ([www.medrecinst.com](http://www.medrecinst.com)).

### Magazines and Trade Journals

*Advance for Health Information Executives*—monthly trade magazine that produces annual survey of computer-based patient record system vendors ([www.advanceforhie.com](http://www.advanceforhie.com)).

*Healthcare Informatics*—monthly journal with frequent software comparison guides ([www.healthcare-informatics.com](http://www.healthcare-informatics.com)).

*Health Data Management*—monthly trade magazine that includes end-of-year resource guide on information technology vendors ([www.healthdatamanagement.com](http://www.healthdatamanagement.com)).

*M.D. Computing*—monthly publication endorsed by AMIA, includes annual Directory of Medical Hardware and Software Companies ([www.mdcomputing.com](http://www.mdcomputing.com)).

### Physician Practice Management Organizations

Medical Group Management Association (MGMA)—professional organization for physician practice leaders offering reference books (including *Computerizing Healthcare Information: Developing Electronic Patient Information Systems* by M. Davis and *Information Technology: Tools for the Medical Practice* by E. Magnis) and an annual conference with a vendor exhibition focused on physician practices ([www.mgma.com](http://www.mgma.com)).

PhysiciansPractice.com—reference articles on IT for the physician practice plus resource listing of selected vendors by product type ([www.PhysiciansPractice.com](http://www.PhysiciansPractice.com)).

## Professional Organizations and Societies

American Academy of Family Physicians (AAFP)—various resources including: vendor survey, vendor requirements, FP Net (online computer information source) and Fam-Med listserv ([www.aafp.org](http://www.aafp.org)).

American Academy of Pediatrics (AAP)—“Special Requirements for Electronic Medical Record Systems in Pediatrics” ([www.aap.org](http://www.aap.org)).

American Medical Association (AMA)—various resources ([www.ama-assn.org](http://www.ama-assn.org)).

## Additional Reading

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## Endnotes

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2. *Medical Economics* Continuing Survey, September 17, 2001, and the U.S. Bureau of Labor Statistics.
3. From the American Medical Association Web page (<http://www.ama-assn.org/ama/pub/article/3216-5979.html>), April 19, 2002.
4. "National Survey of Physicians: Doctors' Opinions About their Profession," Kaiser Family Foundation, March 2002.
5. Ibid.
6. In a recent study published in the *Journal of the American Medical Informatics Association* (May/June 2002), about 63 percent of surveyed physicians and medical students using the ePocrates RX handheld drug reference tool could find drug information in less than 10 seconds, while nearly 54 percent of users reported that it took more than one minute to find drug information using more traditional non-electronic sources. Eighty-three percent of respondents credited the application with improving patient care, and nearly half said the application had helped prevent at least one adverse drug event per week, on average. (From *iHealthBeat*, April 25, 2002)
7. "Technology Usage in Physician Practice Management," a study by the American Medical Association, 2001, as highlighted in *Advance for Health Information Executives*, February 2002.



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