



## Profile of IT Success An Entrepreneur Spotlight



## Family Medical Practice Goes Paperless with Integrated Microsoft Solution

### Overview

**Country:** United States

**Industry:** Healthcare and Healthcare Insurance

### Customer Profile

Founded in 2003 by Dr. Sumathy Pathy, Family Medicine Center in Bellevue, Washington, provides primary and preventative medical care to people of all ages.

### Business Situation

After witnessing operational inefficiencies at her clinic of residency, Dr. Pathy was determined to use technology to help her create an efficient, paperless family medical practice.

### Solution

Mr. Pathy implemented a complete mobile solution with Microsoft® Windows® Small Business Server 2003 as the foundation. A wireless network and several mobile computing devices make it possible for Dr. Pathy to access patient information quickly and securely.

### Benefits

- Reduced annual administrative costs by more than U.S.\$70,000
- Increased overall efficiency by almost 60 percent
- Improved patient care and education
- Decreased the amount of time spent in the office
- Improved employee morale

“Technology is not only helping us work more efficiently, but it is also having a positive impact on patient health. That sort of value is immeasurable.”

Dr. Sumathy Pathy, Owner and Physician, Family Medicine Center

Dr. Sumathy Pathy, having just completed her final year of residency, wanted to build a paperless medical practice that would take advantage of recent technological innovations, enabling her to be more efficient and spend more time with patients. Dr. Pathy needed a solution that would minimize her expenses and help her work efficiently with a small staff. After evaluating several options, she deployed a mobile computing solution with Microsoft® Windows® Small Business Server 2003 as its foundation. Wireless devices—including a laptop computer, a Tablet PC, and a Samsung i700 Pocket PC Phone Edition—also play a key role in the solution. These tools, along with electronic medical records and other software programs, have helped Dr. Pathy streamline processes and provide care to more patients. As an added benefit, the solution saves her practice more than U.S.\$70,000 per year.

**Microsoft®**

“With recent advances in technology, such as those of Microsoft .NET–connected software and Windows CE–based handheld devices, we knew we could design the type of system that would meet the needs of the Family Medicine Center.”

Jay Pathy, Embedded Systems Resolution Consultant

### Situation

Throughout her three years of medical residency, Dr. Sumathy Pathy worked in a large medical clinic, Fort Wayne Family Practice Center in Fort Wayne, Indiana. She spent countless hours performing routine administrative tasks, such as dictating reports for patient visits, proofreading these reports, and then signing off on them after they had been transcribed by an outside organization. Although the clinic employed several assistants who helped with patient admission, medical records, and filing, Dr. Pathy often needed to stay at the clinic hours after it closed to finish her paperwork.

Dictating a single patient report, and proofreading, typically took 15 to 20 minutes. But because the physicians in the clinic regularly saw as many as 20 patients a day, each doctor had an additional five to seven hours of work after seeing the final patient. “Without an electronic record system, all of the physicians had to work extremely long hours just to keep up,” says Dr. Pathy. “After staying late into the evening, we had to come back early the next day to proofread and file the previous day’s reports.”

When Dr. Pathy moved to Washington State and set up her own practice, she wanted to reduce the administrative burden by finding ways to increase efficiency. This was especially important because, unlike the Indiana clinic, Dr. Pathy did not have the luxury of hiring a large administrative staff to assist her.

“At the clinic where I did my residency, everything came in paper form—whether it was a lab report, a test, or a copy of a patient’s medical history,” says Dr. Pathy. “Not only did we have to read and sign each of these documents, but we also had to face the added costs of charting and filing, which were rather substantial,” she says.

### Solution

Before opening her practice, Dr. Pathy consulted her husband, Jay Pathy, who is a freelancer specializing in systems solution development for enterprise-level businesses. Together, they decided to build a paper-free medical practice that would maximize efficiency and minimize the costs associated with the storage and management of paper-based medical records.

During the planning stage in 2002, the Pathys looked at several different solutions, all of which involved electronic medical records (EMR) software. With nearly 100 EMR software programs available to them on the market, the Pathys had many options. Some of these solutions were designed for Linux-based systems, while others were built to run on the Microsoft® Windows® operating system. After careful consideration, the Pathys chose to implement Windows-based software from a local Washington company called Physicians Micro Systems, Inc. (PMSI).

“We did think about using Linux in the beginning,” says Mr. Pathy. “But ultimately our decision came down to an issue of integration.” Mr. Pathy believed that a Linux-based system would require a great deal of customization and maintenance—more than he was willing to take on. “Microsoft offered us a total solution that included a host of different technologies, all of which integrate seamlessly. That is a powerful selling point,” he says.

The Pathys were also drawn to Microsoft because of the potential for creating a nearly wireless computing environment. “With recent advances in technology, such as those of Microsoft .NET–connected software and Microsoft Windows CE–based handheld devices, we knew we could design the type of system that would meet the needs of the Family Medicine Center” adds Mr. Pathy.

### **Simple and Easy Deployment**

Because of the versatility offered by mobile technologies, the clinic needs only five hardware devices for all of its operations:

- A Dell PowerEdge server functions as the clinic's main server.
- A second Dell PowerEdge server handles file and print administration, and can function as a backup server or as part of the nursing station.
- At the front desk, Dr. Pathy's assistant uses a single Compaq Armada laptop computer for patient check-in, registration, scheduling, referrals, patient education, and so on.
- During working hours, Dr. Pathy carries a Tablet PC with her as she moves from one patient room to another.
- When she is away from the office, Dr. Pathy uses a Samsung i700 Pocket PC Phone Edition to stay connected with patients, hospitals, and local pharmacies.

By implementing mobile technologies, Family Medicine Center eliminated the need for separate computers in all of its rooms. "The entire solution was very easy to deploy," says Mr. Pathy. "Even without previous experience with the specific hardware and software we chose, setting up and configuring the network was fairly intuitive."

Because the center's Dell PowerEdge server came preinstalled with Microsoft Windows Small Business Server 2003, it took only 15 minutes for Mr. Pathy to get all the software up and running. Built-in tools simplified the installation process, helping Mr. Pathy take all necessary security steps when setting up the clinic's network. In addition, Small Business Server 2003 helped the clinic secure its information resources by using Active Directory® service integrated authentication, built-in backup resources, and a secure firewall.

### **Fully Integrated Solution**

The Pathys chose to deploy a host of technologies, with Small Business Server as the solution's foundation. Their decision was based on the fact that Small Business Server provides a fully integrated solution that allows for customization, offers a high level of security, and can be expanded when necessary. Small Business Server not only comes with a built-in firewall that—in compliance with the Health Insurance Portability and Accountability Act (HIPAA)—prevents outsiders from accessing private healthcare information, but it also includes several integrated tools such as Microsoft Exchange Server 2003 and the Microsoft Office Outlook® 2003 messaging and collaboration client. In addition, Small Business Server works well with the center's chosen PMSI EMR software.

Together, these technologies have changed the nature of healthcare for Dr. Pathy and her patients. From the time a patient first walks into the center, each step during the medical visit is handled with efficiency. As a testament to this efficiency, Dr. Pathy employs just one medical assistant, who also works as a receptionist. "One assistant is all I need, because the technologies we are using help us be more productive in every area of clinic administration," she says.

### **Patient Check-In**

In most doctors' offices, it is typically someone's job to pull all patient records the day before those patients' scheduled appointments. After check-in, a nurse or medical assistant escorts the patient to an examination room, takes the patient's vital signs, and places a flag outside of the room to let the physician know when to go in. With the Microsoft solution, Dr. Pathy's medical assistant manages the check-in process, shows patients to their rooms, and takes their vital signs. The medical assistant then enters this information into the PMSI EMR

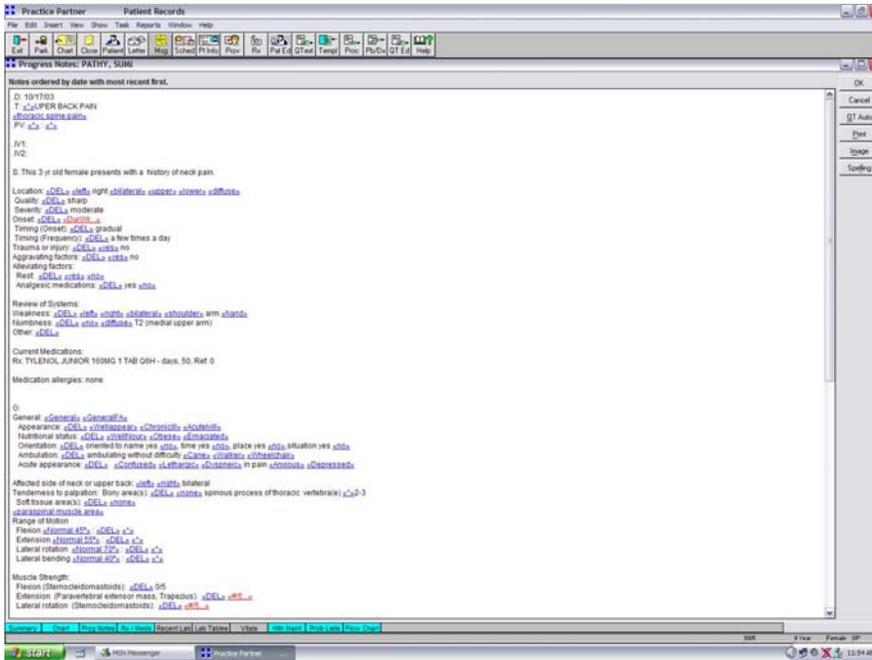


Figure 1. Dr. Pathy uses Windows-based software from PMSI to perform patient intake. For detailed medical diagnosis, she can either choose from preinstalled diagnostic templates or create her own.

system that runs on Small Business Server. Dr. Pathy can simply open up her Tablet PC and see when a patient is ready for her. “Now, I don’t have to go out into the hallway every few minutes to see if my assistant is finished,” says Dr. Pathy.

**Patient Intake**

Dr. Pathy carries her Tablet PC with her throughout the clinic, eliminating the need for a computer in each room. With wireless connectivity, she can access the information she needs at any time. And by using the diagnostic patient-intake templates that are part of the PMSI software on her Tablet PC, Dr. Pathy can know exactly what questions to ask her patients when they present a set of symptoms. (See Figure 1.)

“A patient with a sore throat might have strep throat or a regular viral cold,” says Dr. Pathy. “With the PMSI software, I can choose from several different templates based on the patient’s unique symptoms and can be

confident that I will not miss any relevant information.”

The software also allows Dr. Pathy to create her own custom templates. By clicking through a template and checking off answers to questions with a digital pen, Dr. Pathy can, depending on the type of patient, complete patient intake much faster than before. “I can sometimes save 15 minutes and spend that time educating patients,” says Dr. Pathy.

The Tablet PC also cuts down on possible interruptions during patient visits. “While I am in with the patient, if I have to look for a lab or x-ray report, I don’t have to leave the room to pull records from my patient’s chart, because I already have everything in my computer,” she says. “Because we are using EMR software in conjunction with Small Business Server, any lab results or information can come directly to my Tablet PC, right to my fingertips. I can review the documents and sign off on them right there on the spot.”

With the security features of Microsoft Internet Security and Acceleration (ISA) Server 2000, included in Small Business Server 2003 Premium Edition, Dr. Pathy remains confident that even while she accesses information through the wireless network, her patient records are secure. A virtual private network component built into ISA 2000 restricts remote access, allowing only authorized users to view confidential patient records.

**Patient Education**

Dr. Pathy frequently also uses her Tablet PC as a teaching tool to answer patient questions. She can create detailed diagrams or pull up relevant information to help explain why she recommends a certain course of action over another.

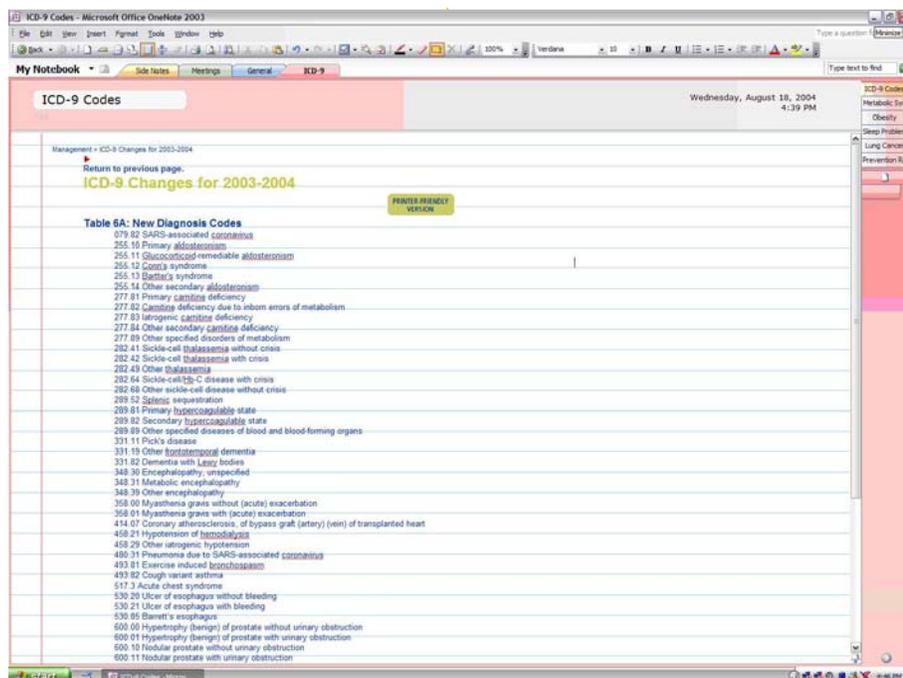


Figure 2. Dr. Pathy has increased the efficiency of her medical billing operations with the Microsoft Office OneNote digital note-taking program. Now, she and her assistant can quickly find the most recent ICD-9 medical billing codes.

“When you copy information from a Web site into OneNote, it automatically saves the Web site address at the bottom of the page,” says Dr. Pathy. “This makes it possible for patients to find more in-depth information at their leisure.”

### Communication with Pharmacies

As a result of the integrated technologies, not only can Dr. Pathy print a prescription from her PC immediately after writing it, but she can also communicate more effectively with pharmacies and other medical providers. By using Microsoft Windows SharePoint® Services—included in Small Business Server—Dr. Pathy or her assistant can fax prescriptions accompanied by a digital signature to a number of local pharmacies. By this means, the prescription can usually be ready by the time a patient arrives at the pharmacy to pick it up. “If I have an established relationship with a pharmacy, then I can fax most prescriptions directly to them. This saves my patients time, because

they don’t have to drop off prescriptions themselves and then wait for them to be filled,” says Dr. Pathy. In addition, Dr. Pathy no longer receives calls from pharmacies to verify prescriptions, allowing her to concentrate on patient care.

### Medical Records

Furthermore, because Dr. Pathy can check off questions and take notes during patient visits, it eliminates the need for later dictation and transcription. “After I have completed all of my patient visits, I am normally finished for the day. I don’t have to stay after the clinic closes to finish my medical records, and I don’t have to come in early the next day,” she says.

### Medical Billing

Dr. Pathy relies on the Ingenix Coders’ Desk Reference (ICD-9) coding manual to find appropriate billing codes for the various treatments she performs. As the industry standard for medical billing, ICD-9 codes are used by insurance companies to determine payment. For example, abdominal pain has one code, while pregnancy has another. (See Figure 2.)

Dr. Pathy creates a separate billing form for each patient visit, which she sends to an outside billing company for processing. “The ICD-9 coding manual is huge,” says Dr. Pathy. “Because there are so many types of conditions or treatments that may have similar types of symptoms, it would be extremely time-consuming to have to flip through the book manually to find the correct billing code.”

With programs such as OneNote, though, Dr. Pathy doesn’t have to flip through the coding manual: Now she can download the most recent version of ICD-9 codes from *The Journal of Family Practice* Web site and then paste the entire reference manual into an OneNote folder. With the advanced search

“When you copy information from a Web site into OneNote, it automatically saves the Web site address at the bottom of the page. This makes it possible for patients to find more in-depth information at their leisure.”

Dr. Sumathy Pathy, Owner and Physician,  
Family Medicine Center

features built into the OneNote software, Dr. Pathy can run a search on “abdominal pain” and view a list of all references included in the ICD-9 manual. This helps her to quickly determine the correct billing code.

### Benefits

As a result of her innovative use of technology, Dr. Pathy is able to manage her practice more efficiently. The Microsoft solution she chose has helped her reduce the time and expense of several manual processes, such as those involved in medical records and billing. It has also made it possible for Dr. Pathy to serve the needs of her patients with the assistance of a single employee, while keeping infrastructure-related expenses to a minimum.

Among other benefits, the integrated technologies allow Dr. Pathy to keep reasonable hours. Since deploying the solution, she has cut back on the time she spends in the office by almost 60 percent. “Most physicians come in over the weekend to do their charting or stay until 8:00 at night to finish their work,” says Dr. Pathy. “But with the technologies we use today, I am usually done by 5:00 or 6:00 at the latest.”

### Reduced Costs

The solution also helps Dr. Pathy minimize the costs associated with the management of her practice. In all, she estimates that various aspects of the solution are helping her to save more than U.S.\$70,000 annually. These cost savings come from three main areas:

- **Staff expenditures.** According to Dr. Pathy, at least four full-time employees would typically be needed to run a practice of similar size. Dr. Pathy, however, relies on only two employees, herself and a single assistant. As a result, she estimates that the Microsoft solution is saving her at least \$70,000 a year, which would otherwise go

to employee salaries, benefits, and outsourcing expenses.

- **Hardware.** By not having a computer in each patient room, Dr. Pathy saves on hardware costs. Were it not for the Tablet PC, Dr. Pathy would need to purchase three computers at a cost of approximately \$3,000.
- **Dictation and transcription.** Because Dr. Pathy captures essential patient information during her visits, she eliminates the need to outsource her medical reports to an outside transcription company. By not having to dictate patient reports, she saves more than two hours each day. In addition, by eliminating transcriptions, she saves up to 20 hours each week. “Because I can take notes while I am speaking with each patient, I end up saving almost \$30,000 annually on transcription,” she says.

### Improved Work Environment

Dr. Pathy and her assistant enjoy the convenience that the integrated technologies offer. In addition to other areas of cost savings, Dr. Pathy saves more than 10 hours each week on miscellaneous office work. As a result, she is able to maintain reasonable hours. “Shortly after I see my last patient, I am done for the day,” she says. “That is not something that most doctors can say.”

Because Family Medicine Center is 90 percent paper-free, employee moral has also benefited. “We love the connected system,” says Dr. Pathy. “It has helped us feel that we are doing something valuable and not just pushing paper. And it is important for us to ensure a positive work environment for everyone.”

### Improved Patient Care

Though Dr. Pathy achieves significant cost savings from the solution, she believes its true value lies in the fact that it makes it possible for her to spend more time with her

## For More Information

For more information about Microsoft products and services, call the Microsoft Sales Information Center at (800) 426-9400. In Canada, call the Microsoft Canada Information Centre at (877) 568-2495. Customers who are deaf or hard-of-hearing can reach Microsoft text telephone (TTY/TDD) services at (800) 892-5234 in the United States or (905) 568-9641 in Canada. Outside the 50 United States and Canada, please contact your local Microsoft subsidiary. To access information using the World Wide Web, go to: [www.microsoft.com](http://www.microsoft.com)

For more information about Family Medicine Center, products and services, call (425) 646-7800 or send e-mail to: [info@familymdcenter.com](mailto:info@familymdcenter.com)

patients, informing them about various treatment options and preventative care. Because Dr. Pathy is now able to complete a patient intake in approximately 15 minutes, she can spend the remaining 30 minutes focusing on patient education. "That extra half-hour is important, because it gives me a chance to address areas of nutritional, developmental, and preventative health," she says.

The ability to show patients diagrams or medical Web sites during visits has resulted in positive feedback from patients. "They really like it," she says. "Technology is not only helping us work more efficiently, but it is also having a positive impact on patient health. And that sort of value is immeasurable."

## Microsoft Solutions for the Healthcare Industry

Microsoft offers the healthcare industry an advanced set of flexible, cost-effective tools that connect employees, information, services, patients, and business partners, turning the accelerating pace of change into competitive advantage.

For more information about Microsoft solutions for the healthcare industry, go to: [www.microsoft.com/resources/healthcare/default.aspx](http://www.microsoft.com/resources/healthcare/default.aspx)

### Software and Services

- Microsoft Office System
  - Microsoft Office 2003 Professional
  - Microsoft Office OneNote 2003
  - Microsoft Office Outlook 2003
- Microsoft Windows Server System™
  - Microsoft Windows Server™ 2003, Standard Edition
  - Microsoft Exchange Server 2003
  - Microsoft Internet and Security Acceleration Server 2000
  - Microsoft Windows Small Business Server 2003, Premium Edition
- Microsoft Windows CE
- Microsoft Windows XP Professional

### Technologies

- Active Directory
- Microsoft .NET
- Microsoft Windows Mobile™ 2003 software for Pocket PCs
- Microsoft Windows SharePoint Services

### Hardware

- Compaq Armada laptop computer for the front desk
- Dell PowerEdge 2600 and 600 servers
- HP LaserJet LJ3330mfp
- Samsung i700 Pocket PC Phone Edition
- Toshiba Portege M200 Tablet PC

© 2004 Microsoft Corporation. All rights reserved. This case study is for informational purposes only. MICROSOFT MAKES NO WARRANTIES, EXPRESS OR IMPLIED, IN THIS SUMMARY. Microsoft, Active Directory OneNote, Outlook, SharePoint, Windows, the Windows logo, Windows Mobile, Windows Server, and Windows Server System are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries. The names of actual companies and products mentioned herein may be the trademarks of their respective owners.