



## Medical Clinic Potentially Cuts \$4,000,000 in Costs with Motion Tablets running Allscripts Software

### Overview

**Region:** Central Illinois  
**Industry:** Medical Practice

#### Customer Profile

Springfield Clinic is the second largest multi-specialty clinic in Illinois. Its medical staff includes 230 physicians and physician extenders and is expected to increase to 300 in 2009.

#### Business Situation

With business growing and their current documentation systems strained, Springfield Clinic felt an electronic health records solution was necessary to manage their anticipated growth and desire to take their medical records process paperless.

#### Solution

Springfield chose to deploy Motion's LE1700 and C5™ loaded with Allscripts Enterprise™ EHR to its 230 providers, several hundred nurses and ancillary staff.

#### Benefits and Results

- Improved nurse productivity
- Enhanced physician recruitment
- More efficient quality care
- Reduced transcription costs
- Organizational workflow agility
- Low cost of technology ownership
- Patient relations improvements

*"You give a nurse a mobile slate and they look high tech and confident. They can face the patient, access their data, get history. When the doctor comes in he knows who is in the exam room and why. It's providing more efficient care."*

James Hewitt, Administrator and CIO

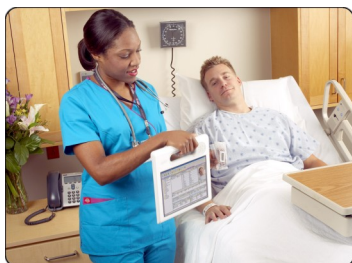
Springfield Clinic, LLP a large multi-specialty physician clinic in Springfield, Illinois, successfully implemented its electronic health record (EHR) application and mobile devices achieving early business results and clinician adoption levels that place it among the most successful large scale ambulatory EHR implementations.

Springfield Clinic's strategy was to introduce a series of tools that would be embraced by nurses, physicians and other caregivers to complete documentation in real-time at the point of patient care.

Springfield Clinic partnered closely with Allscripts and Motion Computing and deployed Allscripts Enterprise™ EHR with Motion's LE1700 and C5 devices to its 230 providers, several hundred nurses and ancillary staff without any physician turnover and with positive response from caregivers and patients alike.



*“The Motion team was knowledgeable about the complexities of clinical workflow and EHR project implementations”*



## Introduction

Springfield Clinic is the second largest, private multi-specialty clinic in Illinois. The medical staff includes 230 physicians and physician extenders (providers) and is expected to increase to 300 providers by 2009.

The clinic is located in central Illinois and currently includes 24 locations across eleven counties. Administrator and CIO, James Hewitt, expects the practice to continue growing an average of ten physicians a year via organic and acquisition growth. “We are seeing smaller practices desire to merge into our clinic infrastructure. We expect that trend to continue,” said Hewitt.

The clinic is physician owned and provides care in more than 30 different specialties. With over 800,000 annual patient encounters that generate more than one million transcription notes and 500,000 prescriptions, administrators and physicians believed electronic health records (EHR) were required to improve efficiency and patient care. They also felt an EHR solution was necessary to manage their anticipated growth and desire to take their medical records process paperless. Following a review of numerous vendors, Allscripts Enterprise EHR (formerly known as TouchWorks™) was selected.

“Critical to the acceptance of an EHR by physicians is its ability to facilitate efficient clinical workflows without negative effects on the valued relationships physicians have with their patients—those that are based on rapport, quality of care, and privacy” (Gadd & Pendrod, 2001, p.194). Prior to implementing Allscripts, administrators and physicians from Springfield Clinic determined that a mobile computing solution that was transparent to workflow would provide the best device strategy for their hundreds of clinicians. Springfield Clinic’s Steering Committee engaged its clinicians in conducting an evaluation of end-user devices including desktop PC, laptop, tablet and ultra-mobile form factors. This process resulted in the selection of Motion Computing® mobile devices and accessories. The Springfield Clinic staff believed the Motion® tablets were superior to other options, particularly in the following areas:

- Fit with ambulatory clinical workflow and agility requirements
- Interoperability with Allscripts Enterprise EHR
- Biometric capabilities
- Slate form factor
- Built-in microphones and Bluetooth® technology
- Low-cost and convenient docking station

Additionally, Springfield Clinic’s research determined that Motion’s healthcare team was unique in that it was comprised of clinicians, clinical project managers, PhD researchers, wireless design engineers and healthcare business executives with an average of 25 years healthcare experience. “The Motion team was very knowledgeable about the complexities of clinical workflow and EHR project implementations and was committed to achieving the measurable business outcomes desired by Springfield Clinic,” said Hewitt.

Now, almost two years into the implementation, Springfield Clinic clinicians have universally accepted the Motion devices and are pleased with the ultra mobility they provide. The physicians are satisfied the technology does not interfere with the patient/physician relationship. In fact, it has been shown to bring the providers and patients closer together allowing them to review the patients history, charting, medications, and chief complaints together in the exam room. In addition, Springfield Clinic clinicians believe the Motion devices enhance their workflow, making the tablets an essential component of their paperless strategy.

## Impetus for Change

One workflow study indicated that the physicians in the ambulatory care setting spend equal time between the documentation and the patient. “The doctors spend between 1.05 to 4.21 minutes reviewing a chart and looking at old results in the computer prior to patient interview (which took anywhere from 5.10 to 9.46 minutes). The CPOE and documentation effort took anywhere from 4.43 to 9.01 minutes to complete” (Louthan, Carrington, Bahamon, & Bauer, 2006 p. 1015). It was important to the providers at Springfield Clinic to keep a proper balance between technology and patient interactions and not allow the technology to become a barrier to care.

Springfield Clinic organized an EHR Oversight Committee to evaluate the EHR alternatives. The EHR evaluation process included site visits to medical facilities already utilizing various EHR solutions. At the other clinics, the committee observed a variety of data input devices, including stationery PC’s inside and outside of exam rooms and various portable devices. The committee believed a point of care (POC) device in the exam room would promote the best quality patient care, but had concerns that standard PCs might compromise the physician/patient encounter. This concern is echoed in the literature (Gadd & Penrod) and Springfield Clinic wanted to insure that their implementation had as little adverse impact as possible.

*“Motion made it clear they were very committed to building medical grade devices for healthcare.”*



Makoul, Curry, & Tang (2001) noted in their exploratory observational study that physicians using an EHR in the ambulatory setting had difficulty in orienting themselves toward their patients when using a fixed computing device compared to those using a paper chart. At Springfield Clinic “we wanted to create an experience for the physicians that assured the EHR hardware was transparent in the physician/patient encounter,” Hewitt explains. “Just as we did with paper, we wanted to replicate the clinical visit and knew that mobility was going to be a key part of the experience.”

Dr. Robert Mulch, Springfield Clinic’s Associate Medical Director agreed. “We wanted to impact physicians’ practice styles as little as possible. If you have a stationary device in every exam room, you lose eye contact and miss body language. A desktop outside of the exam room means you have to walk to an office between every patient. With a mobile device I can look at the complete history in the hallway before walking in the room.” After an exhausting review, the committee pushed for a mobile tablet solution.

In 2005, the Healthcare Information Management Systems Society (HIMSS) reported that new technology acceptance required happy end users. “The success of new technology implementations requires satisfied end-users. Without satisfied users, the prime benefits of any technology-enabled process may go unrealized, jeopardizing the desired benefits as well as contributing to staff unrest and turnover (HIMSS Nursing Informatics Taskforce, 2005). The committee acknowledged that the success of the EHR implementation required clinician satisfaction with the mobile devices. Thus, clinician input was considered when determining the key mobile computing requirements. Top considerations were form factor and biometric capabilities. Convertible-style tablets were ruled out due to economic and size concerns. “Convertibles are more expensive to operate, heavier and bulkier,” says Hewitt. “We wanted a device that was very similar to our patient chart in terms of size and weight, so we decided we were going to go slate. In fact, the slate tablets are lighter than many of the patient charts.”

Another requirement was biometrics. “When we decided to go with an ultra mobile option, one of my big concerns was authentication,” says Hewitt. “A password is required to get into our network, then into the EHR, as well as anytime a doctor needs to initial or sign something. It is a nightmare if you do it on a tablet without a keyboard because it is a masked field you can’t see.”

Hewitt estimates Springfield Clinic physicians see 20 to 30 patients a day and write up to three orders each. “It was possible that the physicians would need to key in a password 60 to 90 times a day,” says Hewitt. Thus Springfield Clinic leaders determined their mobile computing solution must offer biometric identification capabilities.

Overall device performance, satisfactory battery life, and a fast reliable wireless connection, were also deemed critical. The screen size had to be large enough for easy reading and also support the Allscripts Enterprise EHR’s 1024x768 application. Other considerations included high quality voice capture, handwriting capabilities, and an affordable docking station.

The vendor final requirement was a company commitment to healthcare. Because of the scope of their EHR project, the Springfield Clinic leaders believed partnering with a healthcare-focused company was essential for assuring the project’s long term success. “I have worked with a lot of big name vendors in the PC space who say they are focused on healthcare,” says Hewitt. “But if engineering trade-offs have to be made, they give up the healthcare emphasis to focus on the masses. Motion made it clear they were very committed to building medical grade devices for healthcare.” Springfield Clinic representatives evaluated numerous vendors, but few met all their requirements. “Other PC vendors had a pure slate product with some similar product characteristics, but Motion’s depth of experience was the key deciding factor. With successful ambulatory EHR device implementations, clinical expertise and breadth of value added services such as ambulatory workflow expertise, clinician trainers, wireless design, validation support and history of substantially integrating health industry requirements into its product development roadmap gave us assurance that they would be responsive to our needs,” says Hewitt. In the end, Springfield Clinic’s testing of various vendor device alternatives and the strong acceptance of the Motion devices by providers confirmed Motion as its mobile device vendor of choice.

### **Preparing for Change**

Once Springfield Clinic chose Motion as their mobile computing partner, Motion assisted Hewitt and his staff with pre-implementation factors. Motion sent a team of clinical process, workflow and wireless experts to analyze the specialty specific practice patterns, clinical usage scenarios, facility constraints, and wireless design requirements. In this process factors such as practice-specific workflow, building plans, building wall densities, and training curricula were

*“We didn’t have to introduce an incremental step or burden productivity.”*



extensively reviewed. Both Springfield Clinic and Motion recognized that optimal mobile device performance required a proper wireless implementation. Motion provided recommendations for the wireless design and installation. After creating the initial wireless design for Springfield Clinic’s designated pilot clinic, the clinic’s IT staff was able to replicate the setup for their other sites.

Also prior to implementation, Motion worked with Springfield Clinic to develop a power and battery management strategy that took into consideration practice patterns, facility constraints, cost of ownership factors and needs for efficiency improvement. The clinic’s team wanted a seamless solution that didn’t require re-charging batteries multiple times a day. Motion’s workflow experts spent time looking at each specialty and noted how clinicians interacted with the paper chart, including in front of patients. Motion advised Springfield Clinic to introduce a small footprint docking station anywhere a clinician potentially placed a chart. The docking stations gave providers the ability to use a mouse and keyboard while also charging the tablet battery.

“I give Motion full credit for designing a battery preservation workflow that naturally adapted from the paper workflow comfortable to our physicians and medical assistants,” says Hewitt. Motion’s strategy as allowed clinicians to enter an exam room with their tablet, review the electronic chart, and dock the tablet when examining the patient. Clinicians then pick up the tablet, document and write prescriptions. “The reason the strategy is successful is because it is seamless and transparent to the users,” says Hewitt. “We did not introduce an incremental step or burden to their productivity. Nor did we introduce an approach that would require providers to change workflow patterns that were successful for them when interacting with patients which was very important to us.”

Motion also trained the Springfield Clinic staff on the use and care of the Motion devices. Springfield Clinic opted for a “train the trainer” approach so Motion developed a curriculum that Springfield Clinic could replicate and/or modify based on their needs. Motion trained staff during the pilot clinic’s implementation and Springfield Clinic’s trainers worked with the clinicians at subsequent installs.

### **Implementation Strategy**

Springfield Clinic selected a “mini-bang” approach to their EHR implementation. This strategy meant only one clinic went live at a time, but every aspect of the facility was included. Preparation for each go-live involved multiple steps, including clinical

content loading, infrastructure setup, equipment procurement, training, testing, physician to physician in-suite mentoring, and equipment testing. Since project kickoff with Allscripts and Motion, nearly two years ago, a total of 20 sites have gone live in an eighteen month time period.

The Hillsboro Medical Center in Hillsboro, Illinois was Springfield Clinic’s initial Allscripts Enterprise test site. This site included five general medicine and internal medicine providers. Each doctor and physician assistant had his/her own tablet. In addition, there were enough tablets so that each roaming nurse had a unit while on duty. Springfield Clinic spent three months fine-tuning the implementation process at Hillsboro, with Motion and Allscripts providing on-site expertise. By the end of the test period, clinicians had customized their individual workflows to maximize their Allscripts EHR and tablet use. The Clinic’s Informatics team began scheduling full clinic go-lives every two weeks.

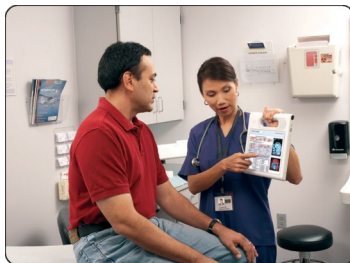
### **Clinician Usage**

Hewitt explains the typical patient workflow using the EHR and tablets. “The receptionist will note that the patient has checked-in in the EHR, and the nurse’s tablet shows the patient has arrived. Then the nurse retrieves the patient from the waiting room, and takes them to the vital station where the nurse enters the results into the tablet via the pen – this is the start of the clinical encounter note.” After the vitals, the nurse takes the patient to the exam room. “The nurse docks the tablet when doing hands on work like blood pressure monitoring. Then they type or use the slate’s pen to note the results,” says Hewitt. Depending on the specialty and physician preference, the nurse may also capture the chief complaint and HPI before leaving the room.

“The provider will pull up and review the note on his tablet before entering the exam room,” says Hewitt. “They’ll usually remain standing and talk to the patient, they then dock the tablet, wash their hands and complete the hands on exam. They wash their hands again, pull the tablet back out of the docking station to order labs or write a prescription and, as appropriate, will do some care guides.” Hewitt stated that the vast majority of physicians finish documenting their notes, including dictating into the tablet and entering charge data as soon as they leave the room. “Once we figured out the right way to configure the set-up for our group’s operations, it worked out very well,” says Dr. Mulch.

Clinic physicians are 100% compliant with their EHR usage across the various modules. Hewitt

*“I can’t think of anyone who hasn’t liked using the tablet.”*



believes part of the credit for that milestone is the flexibility of the solution and the tablet’s all-in-one design. “The physicians are really able to use the system in the way that works for them,” says Hewitt. “If they want to type, they can type. If they want to dictate, they can dictate. And they can use one device for the entire patient encounter.”

When Springfield Clinic completes their full EHR implementation, they will employ approximately 800 Motion tablets and almost 1,000 docking stations.

### **Overall Clinician Acceptance**

The deployment of the Motion Tablets has provided Springfield Clinic’s clinicians an ultra-mobile computer device solution. Clinicians are able to document at the point of care without any of the technical barriers typical with in-exam room PC’s. “The physicians had been used to looking at the paper chart and having something in their hands, so the slate tablet was a good fit,” remarks Dr. Mulch. “I can’t think of anyone who hasn’t liked using the tablet.”

Hewitt says the clinicians have embraced the technology because the workflow is smooth and beneficial to the patient. “You give a nurse a mobile slate and they look high tech and confident. They can face the patient, access their data, get history. When the doctor comes in he knows who is in the exam room and why. It’s providing more efficient care.” The portability of the tablets has also enabled physicians to easily carry the devices to the hospital or home. Clinicians are now able to access patient charts when out of the office via remote connection. Nursing satisfaction has increased, in part, due to improved nursing productivity compared to Springfield Clinic’s previous paper-based charting model.

### **Lower Risk of Transcription Error**

“The Motion tablets make it easier to dictate since physicians don’t have to dictate into a different device. Overall our transcription volume has decreased because an EHR with a point of care device reduces the dictation required,” says Hewitt. Data transcription can lead to increased human error. So with reduced transcription, Springfield Clinic has also reduced potential for documenting error. In a recent study (Gearing, et al. 2006), researchers examined 1,463 sets of vital signs and found that between 14.9% and 25.6% of them contained one or more transcription errors.

### **Cost Savings**

The national average cost for pulling a patient record in a paper-based ambulatory care clinic is \$5.00 per chart. (Von Fuchs, 2007). Given Springfield Clinic’s current volume of 800,000 visits per year, the saving potential could reach \$4,000,000 annually. Additionally, prior to implementing the Motion devices Springfield Clinic would issue separate dictation devices to its providers. Given the audio and speech capture capabilities of the Motion devices this is no longer required.

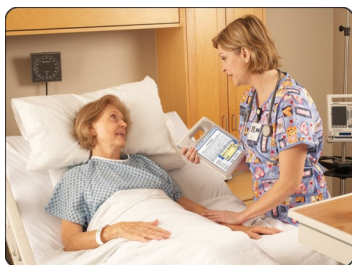
### **Teaming-up for a Successful Installation**

Springfield Clinic collaborated with Motion and Allscripts to ensure a successful EHR implementation. Motion and Allscripts worked together to determine how the Allscripts Enterprise EHR could best integrate and exploit the Motion tablet’s ultra mobility and advanced functionality to support the clinic’s goals. Allscripts software developers completed a series of technical tests and developed prototype forms, user interfaces and integration or extraction routines. Motion worked with Springfield Clinic and Allscripts to conduct interactive design sessions with clinical, operations and IT leadership to define the system performance thresholds and Quality of Service (QoS) metrics. Project resources were then put in place to achieve and sustain performance consistent with the clinician usability targets and QoS targets.

Springfield Clinic’s infrastructure teams worked closely with wireless engineers from Motion to tune the wireless network to meet the demands of ultra-mobile devices such as wireless VoIP phones, tablet PCs, and Wi-Fi enabled PDAs. Springfield Clinic and Motion provided on-the-job in-service training and reinforcement tools to help clinicians become competent and confident in using the Motion tablets with the Allscripts Enterprise application within their workflows.

Springfield Clinic is now in the process of collaborating with Allscripts and Motion to implement advanced workflow solutions that more richly integrate the composite feature sets of Allscripts Enterprise and the Motion C5 mobile clinical assistant (MCA). Examples of planned implementation include using the C5’s integrated camera to capture still pictures and video images that can be retrieved and displayed elegantly within Allscripts Enterprise EHR patient workflow to aid in positive patient ID, wound management, informed consent and the precision of Springfield Clinic’s clinical documentation process.

*“The saving potential could reach \$4,000,000 annually.”*



Intel® was instrumental in formulating the original MCA reference design based on its ethnographic research with clinicians and engineering innovation. The C5 benefited from Intel's research findings as well as similar research Motion had completed during the previous 5 years. The C5 was then developed and commercially manufactured by Motion Computing as the Motion C5 mobile clinical assistant. Created to meet the stringent demands of the acute care environment, the Motion C5 provides a sure-grip handle, a sealed case for easy cleaning and disinfecting, a lightweight design for portability, a 10.4-inch screen for easily viewing clinical information with minimal scrolling, rugged construction that minimizes the impact of dropping the device, and pen and stylus input so clinicians can enter text and navigate the software without being tied to a keyboard. The Motion C5 also includes features such as integrated barcode and RFID readers for patient identification and/or electronic medication administration, an integrated camera, and built-in Wi-Fi\* and Bluetooth\* for wireless connectivity. Clinicians from every major discipline along with clinical leadership were among many in the industry who provided input into the design of the C5 making it unique as a device designed by, with and for clinician users.

### Summary

Springfield Clinic evaluated multiple options before selecting Allscripts and Motion Computing to provide an EHR and device solution. Motion Computing's tablets met Springfield Clinic's requirements for an ultra-mobile device that offered biometrics and voice and handwriting capture in a slate form factor. The Clinic implemented Allscripts Enterprise EHR with the Motion Tablets and now enjoys workflow improvements, less transcription, savings, and improved patient care and satisfaction. Care delivery has improved because clinicians can easily access information at the point of care. By thoughtfully applying technology to improve workflow, healthcare leaders at Springfield Clinic have demonstrated new ways to improve patient care while optimizing clinician productivity. Product innovations such as the Motion Tablets, in concert with industry collaboration, can help healthcare institutions achieve positive and lasting change.

“When you have hardware companies developing innovative solutions and application vendors focused on product enhancements, it is important for the vendors to work together,” says Hewitt. “For solutions to integrate seamlessly the hardware vendors must drive collaboration. I've been pleased to see Motion, Allscripts and Intel aggressively take this stance in healthcare.”