information *edge*

Evergreen Healthcare: Building a Springboard for Clinical Transformation

EXECUTIVE SUMMARY

In his groundbreaking book "The Tipping Point," Malcolm Gladwell asserts that popular ideas, trends, fads and other "social epidemics" are spread by a small number of key people he calls connectors, mavens and salesmen. These people play pivotal roles in bringing ideas to a "tipping point" in populations so that they become movements.

Gladwell's model is useful in understanding how a healthcare delivery organization can transform its clinical environment to become an efficient, evidence-based, team-oriented care provider focused on patient safety and quality outcomes. It's become a cliché to say that the technology is the easy part, changing people and processes to best utilize the technology is the real challenge in such transformations. That's where physician and nurse leaders, executives and board members act as connectors, mavens and salesmen. They drive acceptance and enthusiasm throughout the enterprise for the new system, ultimately making it work as part of the organizational culture.

Evergreen Healthcare in Kirkland, Wash., is a case in point.

A non-profit community medical center in the Seattle metro area with high-tech giant Microsoft Corp. as neighbor, Evergreen launched an initiative last year that replaced an aging and obsolete legacy HIS with a brand-new clinical IT infrastructure, building a springboard for other, soon-to-be-implemented, clinical initiatives like CPOE (computerized physician order entry). Using a rapid-implementation methodology involving off-site software development, Evergreen was able to build, install and operate 16 software applications in only 11 months, effectively rebuilding its IT infrastructure around improved clinical and administrative processes.

A key factor in Evergreen's success: its hospitalist culture. Hospitalists, who care for nearly two-thirds of Evergreen's inpatients, heavily influenced primary care physicians in favor of the new system. But the change also required a new vision on the part of every employee, many of whom saw the organization as an integrated entity for the first time. Revenue-cycle managers, for example, also had their work processes reengineered to become more integrated with the enterprise.

In this Information Edge, we interview a cross section of Evergreen executives, managers and end-users to explore how the organization executed its clinical IT strategy and the lessons it learned. Evergreen is not a large academic medical center with a huge staff of medical informaticists, but as a medium-sized, community-based organization it represents the bulk of hospital care in this country. In that vein, we think it provides an instructive case study of the tipping point for clinical transformation in any healthcare system.

Improving Healthcare Performance Through Information Management and Process Improvement

Silos in the sunset

With a system built on traditional silos of information that couldn't talk to each other and an old, finance-focused HIS being "sunset" or discontinued, Evergreen Healthcare faced the need to transform its IT infrastructure centered around patient safety and clinical quality.

Evergreen is a $300-million a year, non-profit, community-based healthcare provider serving more than 400,000 people in and around Kirkland, Wash., just east of downtown Seattle across Lake Washington. With 244-bed Evergreen Hospital Medical Center as the cornerstone, the campus also features an outpatient surgery center, hospice and professional and physician offices. The Evergreen Medical Group operates eight primary care sites around the community.

Having realized as long ago as 1997 that the existing system needed replacing, Evergreen's publicly-elected Board of Commissioners had encouraged management to develop an IT master plan. A formal IT planning retreat ensued in 1999 with participation by commissioners, physicians and a cross-section of management.

The group identified the new system's goals:

1. A single repository for patient data.
2. Reduced medical errors and increased patient safety.
3. Better communication between departments.
4. Ability to document and chart aspects of patient care in a consistent, predictable way.
5. Ability to access patient information throughout the system.

The board was even involved early on in the selection process of the new system, making visits to user sites and vendor corporate offices. Eighteen months after the retreat, in spring 2001, vendor review was underway and that summer a final decision was made in favor of Cerner Corp.'s "Solutions Factory Model," a limited-scope clinical HIS that could be rapidly developed off-site at the vendor's headquarters in Kansas City. The project was dubbed C.A.R.E., for Cerner Achieving Results at Evergreen.

Speed to market

**Steve Brown,
Evergreen CEO**

Selecting the off-site, rapid-development model for the system was driven by several factors, according to Steve Brown, Evergreen CEO. "Speed to market was important because of the sunsetting of the legacy Gerber Alley product. We also needed to have multiple applications developed, and the Solutions Factory model helped do that while accommodating a mainstream facility like Evergreen that didn't require a lot of customization," he says.

Finally, the model offered a good discipline for the organization—it helped user groups focus. "Without the factory we'd still be building different applications because the needs of users can become insatiable," says Brown.

But Brown was also sold on the single integrated system strategy, having spent 18 years at Northern Virginia-based Inova Health System, which uses a single system from IDX Corp. at five hospitals. "I'm comfortable with

the approach. I believe in that approach. There are risks, but you have to mitigate that risk through training, education and prudent use of consultants. It worked. I'm amazed and so pleased at how well it's gone—truly a tribute to our people."

Evergreen kicked off implementation in January 2002 and went live 11 months later. The project required 70 full-time people, not including the vendor's staff.

The hospital is also implementing a separate EMR system at eight primary care sites and a PACS (picture and archiving communication system).

Man on the street

Brown says getting an enterprise-wide, clinically-based IT initiative of this magnitude approved and launched requires a Board of Commissioners tied into the community. "People stop board members on the street and tell them they want single registration, no hassle, the stuff that makes the patient experience better. We could not have a more supportive board."

But that was not the only key factor. Involvement of physicians, specifically Evergreen's hospitalists, was a critical success factor from the start. "We were fortunate to have a very active and dynamic hospitalist group, which sees at least 60% of primary care inpatients. They were quite active in the selection, training and leading of the effort," says Brown.

Evergreen also appointed one of its hospitalists, David Likosky, MD, to a newly created position, that of IT medical director, to help lead the effort.

David Kiehn, Senior VP of Finance and Technology

Hospitalists are quite effective enablers of change, particularly in terms of technology adoption among referring physicians, says David Kiehn, Evergreen's senior VP of Finance and Technology. He says the local primary care community has faith in them and they wield influence far beyond their numbers: there are only six hospitalists compared to a total of 700 active medical staff at Evergreen.

Continual transformation

"We're in an IT-based cultural transformation continually. So we want the word transformation to become the cornerstone. We realize that technology is only one piece, another is workflow," Kiehn says, adding that First Consulting Group was hired to help redesign workflow processes.

The effort has provided a foundation or springboard for caregivers to become comfortable with technology. "As you get to CPOE, you're dealing with a whole different group of individuals: physicians who have to agree to use the system to make it a success," he says.

"One of the things we're striving for is to be able to share patient information collected at the hospital with other providers in the community. We want to be able to turn data into information and then into informatics to make better clinical and financial decisions. Evergreen ought to be an organization that pushes information to end-users. That's why we involved end-users in designing the system," Kiehn says.

Evergreen Campus

Building a foundation for CPOE

One end-user—and leader of the effort—is David Likosky, MD, medical director of IT and a hospitalist at Evergreen for nearly three years. His position, created once the organization opted to go with the clinical system, acts as formal liaison with physicians for all IT initiatives.

Likosky is the functional link between two key committees: a multidisciplinary Clinical Excellence Committee that includes all medical directors, the chief of staff, the VP of nursing and other managers involved in clinical quality; and the IT Steering Committee.

"My position is not an IT job for IT's sake, but driven by the clinical goals of the organization," he says. "It's in physicians' interest to have a system that is integrated and works well. We're starting to build the foundation for CPOE. It surprised me that doctors are asking for it. You need to provide some value up front for physicians because it's clear as a new process it will slow physicians down in the beginning."

Evergreen's six hospitalists, who work with 300 primary care doctors and provide consulting to specialists, helped pilot the Web PowerChart component nine months before "Go Live" for the whole system as a way to test it and get physicians involved early. They also served as trainers for the other physicians. "We were highly visible role models," says Likosky.

Realizing results

While it's too early for benefits data from the new system, Likosky sees anecdotal value from more legible signatures, reduced numbers of telephone calls doctors get from illegible orders and quicker access to lab results.

"Some of those things are hard to quantify and you don't necessarily register them as benefits of the system," he says. "I haven't had to call the lab for months because I get the results online. Before, it required multiple calls daily. But if I didn't think about it I wouldn't necessarily realize the benefit."

Because of the sharp reduction in such calls, the laboratory has already been able to take a full-time staffer off phone duty to concentrate on more patient care or improvement efforts within the laboratory.

Likosky and other hospitalists spend 30 minutes training each referring physician, beginning with those with highest patient volume. Because the system is Web-based there's no special software. Each doctor does receive a special key fob that provides secure access to the system. Physicians generally favor physician trainers and prefer individual training or small groups of up to three or four, he says.

The training has had a positive side benefit. "One of the problems with the hospitalist system is that it tends to alienate local physicians from the hospital because they never have to come in," says Likosky. "So when one of us goes out on a training visit, it's seen as the hospital reaching out and the hospital and physician become bonded."

Using technology to improve clinical outcomes

Evergreen realized that the advent of a new HIS system provided opportunities to improve clinical outcomes and reduce clinical practice variation. FCG worked in a partnership with Evergreen hospitalists and key staff members to identify opportunities for improvement. One such area already underway before the advent of C.A.R.E. was the management of congestive heart failure patients.

Data showed there was a tremendous opportunity to reduce length of stay and standardize care around evidence-based medicine. Through the use of standard order sets, FCG and Evergreen hospitalists began the first step in standardizing care. The CHF Outpatient Clinic development was brought into the project design to provide a continuum of care for the patients, and implementation of the order sets allowed the team to have case managers begin an education process and feed into an outpatient program. Metrics were set for success, and the program has already noticed an increase in compliance with use of beta blockers, decrease in readmission rates and a shortened length of stay.

Evergreen is continuing to automate clinical pathways for ventilator management, stroke and hip replacement, building on the work of the CHF team.

Faxless in Seattle

Physician response to the capabilities of the new system has been quite positive.

"I was visiting a primary care physician a couple months ago. She had just been notified by the ER that one of her patients was there and, for the first time, was able to call up information about the patient real time—and see that the patient was intubated. She was amazed at being able to retrieve that

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Senior VP of Finance and Technology

information instead of waiting for a faxed report," says Likosky.

"Before the system went live, hospitalists were using the system but Emergency Department doctors weren't. They'd say 'I don't have the labs back, the chest x-ray.' They were in the ER waiting to get a hard copy. I'd be sitting at home and could tell them what the results were," he says, because he had secure Web access to the information.

Evergreen is also automating clinical pathways, starting with such illnesses as stroke, congestive heart failure and hip replacement. "They're easy wins and it also encourages compliance with the pathway. It also gives you a data tool to look at outcomes," says Likosky, adding, "We brought in FCG to help us examine every process in the hospital. It didn't make sense to automate a poor process."

The next immediate step is to work with the IT department to automate pharmacy—including adding robotic barcoding—and link it to the new clinical system. This effort proceeds concurrent with Evergreen Medical Group moving to an electronic medical record.

Hub of the wheel

Terry Jones, a health unit coordinator for Specialty Surgery, acts as a liaison among doctors, nurses and ancillary staff and in so doing acts as the "hub of the wheel" when it comes to clinical care.

"The bulk of our work is done on the new system," she says. "Most of it is working very well, but some of it has slowed the process down." In terms of the latter, for example, a new labeling process for charts—patient name, age and other core information—is more accurate and easier to read than the previous system but also more time consuming. The old method used an address-ograph machine that was used to stamp the chart once, but the image often became faint.

Besides its increased clarity, the new labeling system provides coordinators more control because they can make their own labels and change them at a moment's notice, Jones says.

Legacy cheat sheets

The beauty of the old system was that end-users had developed cheat sheets and shortcuts to make it faster and easier to use. "We're still learning the new system's language, there are new abbreviations to learn for a patient feeding tube, for example. It takes time," she says.

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> **Terry Jones**
> **Health Unit Coordinator**
> **Specialty Surgery**

resolving documentation issues, for example—the downside is that there is less of an interactive relationship between individuals in different departments and units. "We're not talking to them as much," says Jones, who has enjoyed "job shadowing" in other departments like diagnostic imaging in order to better understand their needs and how they influence her work.

Jones does like features of the new system such as the expanded comment field, which allows more flexibility in adding notes about a patient's x-ray or CT scan. Also, she can graphically highlight specific laboratory results to enhance reports. Indeed, the system is sophisticated enough that she looks forward to learning its myriad capabilities.

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> **John A. McDowell, Jr.**
> **Administrative Director**
> **Governance and Support**

Despite the learning curve and the fact that not everything is streamlined under the new system yet, she says the new clinical HIS provides access to more data about the patient and is less cumbersome than the old. Under the old system, for instance, to look at both chemistry and hematology results required logging in and out and then back in again.

"Eventually it's owned by everybody"

John A. McDowell, Jr., administrative director for Governance and Support Services at Evergreen, knows what it's like to run a campaign. As liaison to Evergreen's Board of Commissioners, he also knows that it takes an enlightened and active board to success-

fully implement an IT project as all encompassing as Evergreen's C.A.R.E.

With software development well underway, last summer McDowell was charged with overseeing the change management or transition planning. "All the soft stuff," he says. "With any project of this size, ownership originates in the IT department, but at some point as you prepare to roll it out, it must be owned by everybody." This becomes the cultural challenge at the transition to a new user-based system.

In many departments, managers who could help lead the change either didn't exist or were too busy to take on the task. McDowell enrolled some long-time employees who jumped into the effort.

Soft spot

It became clear that the soft stuff was becoming vitally important. "Nobody owned the entire communication plan, employee relations, how job descriptions were going to change and what to do to alleviate staff's fear of these changes," McDowell says. To ready employees for the upcoming implementation, CEO Brown sent an e-mail to all employees that, among other things, reassured them that no one was going to lose their job as a result of the new system.

Suddenly there was a need for all varieties of collateral. McDowell set up a transition team that met every week, inviting managers from HR, training, process improvement, marketing and PR. It was an open meeting that

kept growing in size as more people became interested. "People who got involved in the change management piece suddenly found a role and a purpose," McDowell says.

Because many managers remained largely unaware of the intricacies of the implementation process, the transition team developed a book for each one of them with key dates and contacts, a listing of all the system's benefits, references, a checklist, HR issues, a glossary of terms, and HIPAA and training information. FCG consultants mapped processes and developed process-improvement books for all patient care areas as well as dietary, pharmacy, housekeeping, the laboratory and Emergency Department. They also assisted with training books.

An internal newsletter specific to the IT project was launched and every employee received three pieces of communication at home: two letters and a post card between late Sept. and late Nov. 2002.

It's Super User!

One of the most critical aspects of the implementation was an extensive training program. Employees were offered voluntary training courses on Windows Essentials as well as the required courses in their pieces of the new system, including how processes would change with Go-Live. Evergreen had a "sandbox" where end-users could practice on the new system before it went live.

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Medical director of IT

A key training strategy was to identify 50 to 60 Super Users, technically savvy and enthusiastic users who could pioneer the new system and teach others. The Super Users were employees who received additional training in specific applications and were available during Go-Live to provide on-the-floor support to end-users.

"I still ask myself how we got 2,000 people trained," says McDowell. "The resources we committed to a full-scale training department paid off."

Building enthusiasm

By the time of Go Live on Dec. 4, the organization had covered the gamut of transition management—including handing out T-shirts that day to all employees along with a printed two-day rollout schedule. Administrators walked around that night and distributed 100 6-gallon popcorn tins to all departments.

Evergreen included an informational insert in all patient bills. The registration department published a list of answers to expected patient questions. Posters begging pardon for the interference went up at registration sites. The training department worked with Cerner to develop comprehensive training manuals, flashcards and laminated teaching aids that could be attached to the side of the monitor for each computer.

The change was felt throughout the organization. Even housekeeping went live with a new computerized bed board. Super Users set up a command room to monitor the launch, but there was only one system shutdown and it lasted just 15 minutes.

McDowell attributes the relative lack of glitches to a motivated team. "I was really lucky I had a group of people who were really charged up."

Greening of the revenue cycle

While the focus of Evergreen's new infrastructure is clinical, enterprise integration is the organization's overarching goal—and that's why redesigning and automating the revenue cycle became an important part of the new system.

Terry Cartier, Director of Patient Business Services, served as business-process adviser for the initiative. "My role was to look at how the business processes in one area interacted with those in another. We made significant business process changes." The biggest change, she says, was establishing accountability for registration and billing information at the front end of the patient-encounter process.

Historically, when patients present themselves at registration, they provide all the information they know at the moment, leaving gaps such as the insurance group number or other required element. What can happen later is that the billing department inserts incorrect information in these gaps in order to get the bill out the door.

When an inpatient gets discharged after a hospital stay, there is a five-day window to gather all charges. At the end of the five days, a bill gets "dropped"—generated and transmitted electronically—with whatever information is in the system. If that is erroneous information, as a result of the insurer's requirements the bill gets returned to the hospital unpaid.

Redefining the revenue cycle

"There's a trend in the industry to view the revenue cycle from end to end, rather than beginning in the middle, as we have traditionally done," notes Cartier. "So we're putting in accountability at the front end, which requires new processes."

Evergreen's new system prints out a report with key fields the day after a patient registers. If required information is missing at that time, registration staff can obtain it and complete the form. Should that opportunity be missed, Business Services no longer completes that information. They send it back to its origin with the registration clerks.

"Before, if you weren't accountable for the information, you didn't know or care if it was missing. The registration clerks are beginning to look more closely. They're thinking of ways to get the information. It will take awhile to change the behavior of the 75 to 100 staff who register patient at different points," says Cartier.

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With 600,000 person-records in the database, establishing data integrity in the revenue cycle is critical. Should a patient return to the hospital, the data about that person obviously needs to be accurate. Ironically, making certain fields required in registration forms can cause workers to "put in garbage" just to move the admission on, says Cartier. As part of the redesign, Business Services eliminated many required fields in patient registration forms in order to eliminate that source of potential errors.

Taking out the garbage

While that move initially alarmed back-end-office personnel, it greatly improved the integrity of the data. "I'd rather have no information than garbage such as an inaccurate group number," declares Cartier, who says such misinformation can hurt an institution financially because it eventually causes the bill to be returned for correction. "We've lost considerable AR days because we didn't have good enough information to begin with. So we took a different strategy that took a leap of faith," she says.

Holding registration personnel accountable is critical and therefore a key message in training is that it's their responsibility to complete as many of the fields as accurately as possible.

"Theoretically, I'd love no human intervention [to correct and regenerate a bill]. My philosophy is the more you have to touch a bill, the more AR days you have," says

Cartier, who notes that it can take four or five days for a bill to be rerouted for correction and retransmission. "We drop hundreds, sometime thousands of claims a day. It has a huge financial impact."

Lessons learned

Revenue-cycle issues aside, Evergreen's core business is patient care, and that's where major benefits should arise from the new system.

"We pulled lots of staff out of patient care areas. Hospitals don't usually put those kinds of resources into an IT project like this. They typically muddle along."

Christina Armstrong
Director
Patient Care Services

Christina Armstrong, Director of Patient Care Services (nursing and other areas), says one of the biggest benefits is access to data on compliance and outcomes, determining whether nurses are doing a good job charting, for example. "We have quick access to things that used to take time to gather and we can look at trends sooner," she says.

Armstrong says the system gives every indication it should help address the demands arising from the Leapfrog Group's standards and the need for HIPAA compliance.

She considers the initiative a success to date and cites three main factors for its success:

1. Communication from the early stages.
2. Involvement of staff, especially physicians and nurses.
3. Abundant resources devoted to the project.

"We pulled lots of staff out of patient care areas. Hospitals don't usually put those kinds of resources into an IT project like this. They typically muddle along. The staff was really

enthusiastic—there was lots of communication. So when we went live, it wasn't perfect, but the staff didn't blink. They were right there to identify any issues that needed correction."

Same hospital, different languages

Information silos are one thing, Towers of Babel are another. "IT and nursing speak completely different languages," says Armstrong. "The entire effort should be clinically-focused because the job is taking care of patients. It's been difficult at times to describe to a non-clinical person how the job gets done. We have to learn how to speak in a common language.

Under the old system, to look at both chemistry and hematology results required logging in and out and then back in again.

"One issue we identified early was anticipating the need for resources, because as a project team we did not have much guidance about actual need. We didn't fully understand the amount of work required in this effort," says Claire Larsen, Director of Specialty Services (ED and other areas) and clinical champion for the project.

Larsen says one of the huge factors in success was the early involvement of physicians. Key facts about the project were spelled out, guiding principles clearly defined. "This encouraged full engagement of the staff, and we were able to exceed vendor expectations of our performance."

One of the biggest lessons learned: the significance of workflow issues. "We didn't realize how greatly some of our processes would change; however, we did a great job of evaluating everyday work flow" she says.

Same unit, different process

FCG consultants helped address the process improvement. "We worked with staff to reduce processes from multiple steps to only a few, and to standardize work flow throughout the patient care areas," says Larsen. One unit would process an order differently than another unit, or even a different shift on the same unit. Indeed, variability often occurred even within the same department. "To enhance patient safety, departments necessarily compromised on work flow decisions in order to maintain one standard of care," says Larsen.

Part of the factory-built strategy is that the client needed to get heavily involved in testing, training and process improvement. "You have to pull your best people off units to get the project done, we had some very strict timelines," she says.

"We began by expecting to learn best practices from the vendor. Then we shifted to just recommendations. Then we shifted to what we thought was really good. We had to make a lot of it up," says Larsen. "Some of the technical applications are so new that 'best practices' simply haven't been determined yet."

While it's difficult to quantify any improvements at this point, Armstrong says eliminating redundancies in patient information can't have anything but a positive impact on the patient experience and the clinical process in general. For example, she says that no less than 70 forms used by the hospital document patient allergies. All those forms will be

consolidated into a single source of information on the new clinical system.

The work is daunting because it involves chipping away at every process to make it more efficient, accurate and effective, says Armstrong. "It's a long journey, but it's going to happen, and clinicians are already seeing the benefits."

Conclusion

Evergreen opted for the factory-built approach largely because it could achieve 75% of the capability it needed "out of the shoot." The drawback is that it was limited in the changes Evergreen could make in the application implementation in a timely manner. Evergreen ended up adding a few applications out of the scope of original work and creating somewhat of a hybrid to the factory process. Also, there is a significant amount of resources required to implement such a core system, even if

most of the software development was done offsite.

Still, most Evergreen clinicians and executives are pleased with the overall success of the project. Besides replacing an obsolete HIS with what is, by all accounts, a solid clinical information system, the act of achieving the implementation had a dramatic and positive impact on the organization.

Medical IT director Likosky says the effort "has changed the nature of this hospital. We're a community. Now everyone sees each other as a member of a team—from the family maternity center to registration. During that whole redesign we got to know all the pieces of the puzzle."

That ability to view the entire entity was part of the overall cultural change that took place. You might say a movement for clinical and operational excellence has reached the tipping point at Evergreen.