MOVING MEDICAL RECORDS ONLINE

"Community Health Record" Puts Needed Information at Providers' Fingertips

BY JOHN HAUGHOM,
MD

Dr. Haughom is corporate senior vice president, healthcare improvement, PeaceHealth, Oregon Region, Eugene, OR.

On March 2, 1998, the emergency room at Sacred Heart Medical Center, Eugene, OR, got a call from a sister hospital on the Oregon coast. A critically ill woman was being transferred to Sacred Heart for emergency care and would be arriving in less than an hour; unfortunately, the caller had no other information about her. On an impulse, the physician tried the electronic medical record system that had been launched just the day before. To the physician's surprise, the patient's medical chart popped up, complete with the clinical information needed to provide her with the best possible care as soon as she arrived.

When PeaceHealth, the two hospitals' parent company, decided in 1994 to develop a computerized medical record, those of us who were involved in that decision did not expect instant success. And the system has in fact evolved incrementally, delivering setbacks as well as successes along the way. But the case of the patient from the Oregon coast demonstrates how a computerized medical record can improve patient care.

INFORMATION IS KEY

The importance of good medical information has been known for centuries. In 1863 Florence Nightingale wrote:

> In attempting to arrive at the truth, I have applied everywhere for information, but in scarcely an instance have I been able to obtain hospital records fit for any purpose of comparison. If they could be obtained . . . they would show [those who pay for healthcare] how their money was being spent, what good was really being done with it, or whether their money was doing mischief rather than good.[1]

One hundred and thirty years later, PeaceHealth's leaders decided that better information was the key both to better patient care and to the survival of the organization and its mission. We had recently made a strategic decision to integrate hospital and clinic-based care by acquiring medical groups. Integration would improve the flow of information—and thus services— throughout the organization. But this could be accomplished only if we improved our information technology (IT). The ultimate goal was to optimize the decisions of all caregivers across the continuum of care.

We did this because of growing evidence that the information needed to make good medical decisions is frequently lacking in the U.S. health-care system. According to various studies:

• An estimated 70 percent of hospital records are incomplete.

• Physicians don't have access to patients' medical records in 30 percent of all visits.

• More than 11 percent of all laboratory tests have to be repeated because the results are not in the patient's record.[2]

In 1991 the Institute of Medicine issued a report concluding that to make advances in the quality of care, efficiency of process, and containment of costs, U.S. healthcare needed to adopt computer-based patient records.[3]

INTRODUCING THE CHR

After searching in vain for a "perfect" system to adopt, in 1994 we at PeaceHealth contracted with an IT company called PHAMIS to build a community-wide electronic medical record in

each of the five regions the system serves.

We called our computerized medical record the Community Health Record (CHR), thereby emphasizing that it is meant to serve the entire community, not a particular hospital or health-care provider. We also made two other early decisions that turned out to be important:

• The CHR's primary focus would be on improving clinical care, not on compiling financial information.

• All five regions would use the same information system, rather than developing their own. This decision required some cultural changes, but it also saved about 30 percent in development costs.

The project has been expensive. Since 1994, we have invested more than $30 million in developing the CHR. This investment represents on average about 5 percent of PeaceHealth's annual operating budget, consistent with the amount recommended in a 1997 study done by the GartnerGroup, a Stamford, CT, IT consulting firm.[4] This percentage is likely to rise in the future.[5]

FIRST FAILURE, THEN SUCCESS
After spending two years developing the CHR, PeaceHealth launched it at St. Joseph Hospital, Bellingham, WA, in January 1996. This "go-live" was not a success. Physicians and staff members could not access the information they needed, and quickly resorted to the old paper record system. "Despite our best efforts, it was a real shaky time," one physician said later. "For a while we thought, maybe it's not going to work."

The CHR team regrouped. Analyzing the St. Joseph experience, we decided that we had made several serious mistakes—including making the system too complex; failing to involve novice users; and trying to make the CHR replace, rather than enhance, the paper chart.

Having learned these lessons, we had our second go-live at Peace Harbor Hospital, Florence, OR, in June 1997. Unlike the St. Joseph experience, this was smooth and uneventful.

Then, in March 1998, we had what was perhaps our most important CHR launch, at Sacred Heart. This medical center, with 432 beds and more than 2,500 employees, is by far Peace-Health's largest facility. Rumors about the problems with the St. Joseph go-live were rife among Sacred Heart's physicians and staff, so the hospital's communications department worked especially hard at preparing everyone for the launch. Fortunately, it was again a complete success.

CONFIDENTIALITY CONCERNS
From the outset we knew that some people would worry about the confidentiality of infor-

mation stored in the CHR. We therefore worked hard at building a secure system, implementing stringent security policies and training staff on security measures. We have hired a full-time security officer and established an information security committee. The following are PeaceHealth policies on privacy and confidentiality:

• The CHR audits its activity, showing who looked at a record when. Patients may request a copy of this record audit.

• All CHR users complete a security training program designed specifically for their jobs and sign a security agreement. Those who violate the agreement face strict penalties, including possible termination.

• CHR users are assigned passwords that give them access only to those parts of the record they need to see to do their jobs.

• CHR computer screens automatically shut down after only a few minutes of inactivity (typically 10, but it varies according to the user), so information is not inadvertently left on the screen.

So far, these policies have worked well and there have been no serious public complaints

INFORMATION FOUND ON THE CHR

The Community Health Record (CHR) currently provides at least some of the following pieces of information in each of PeaceHealth's regions:
- Transcriptions (physician reports)
- Laboratory results (available from the hospital only)
- Imaging results (available from the hospital only)
- Cardiovascular reports
- Allergies
- Automated medication/allergy checking
- Nursing admission history
- Demographic data
- Billing data
- Current and previous admissions
- Inpatient pharmacy
- Vital signs
- Intake and output
- Patient problem lists
- Automated outpatient prescription writing

In the future, the CHR will also provide:
- Patient alerts
- Detailed nursing care plans
- Automated data collection from patient care equipment (e.g., ventilators, drip counters, monitors)
- Clinician tools for office management (i.e., patient care protocols)
- Improved tracking of emergency room patients
- Imaging and lab results from all providers (not just the hospital)
- Clinical decision support

about the computerization of patient medical records.

LESSONS LEARNED

In constructing the CHR, we learned some important lessons.

One Size Does Not Fit All An information system is an organization's nervous system and must therefore be constructed to fit the organization's unique needs. It cannot be bought "off the shelf." This means that no vendor (or group of vendors) can simply install your information system for you. You will have figure out how to put the technology together and make it work.

Do Not Neglect Staff Skills "People-ware" is more important than hardware and software. It is vital to provide staff members with the skills they will need to run a computerized record system and to involve inexperienced users, not just those knowledgeable about computer technology, in testing the system. To build the CHR, we formed teams whose members came from different regions and disciplines. Many were clinicians—physicians, nurses, pharmacists, and other healthcare professionals—who in the process learned enough about the software to apply it in their work.

Apply Art as Well as Science Do not expect to load a paper chart directly into the computer. There is a real art to displaying medical information on a computer screen in a way that is useful to the physicians, nurses, and specialists who need it. Hire a talented designer to create these displays. However, some forms cannot be adapted to the computer. The computerized medical record is an adjunct to—not a substitute for—paper, and will remain such for the foreseeable future.

Do Not Try to Cut Corners on Hardware Make sure you have enough computer terminals—with adequate processing power—for all your facility's bedsides and workstations.

Committed Leadership Is a Prerequisite Because complicated projects such as this fundamentally alter every aspect of an organization, they cannot be accomplished without ongoing, committed leadership from the top. PeaceHealth was fortunate to have visionary leaders.

BENEFITS OF THE CHR

PeaceHealth's leaders have not been disappointed in the CHR's benefits.

Efficiency By consolidating pieces of information, the CHR has eliminated the multiple paper records formerly scattered throughout the system. Physicians like having information readily at hand, when and where they need it. Patients like not having to repeat the same information to various providers.

Quality Improvement Physicians can use data collect-

ed in the CHR to track and measure outcomes in patient care. Standard protocols appear automatically on the screen to guide caregivers. The CHR also helps doctors prescribe drugs, warning them about possible adverse interactions and allergies. Soon physicians will issue their orders directly through the CHR, thereby avoiding errors due to misunderstandings.

Multiple Access Points The CHR can provide information to multiple caregivers simultaneously; it provides a lifetime of records across the continuum of care.

Electronic Charging As caregivers record patient information, the CHR automatically logs a charge to the patient. Because it improves billing accuracy, CHR increases revenue.

FAREWELL TO PAPER

Three years after its shaky start, CHR has won widespread support among St. Joseph Hospital's physicians. "Most would now acknowledge that CHR works extremely well and is very useful to them," says one medical staff member. "In fact, many physicians new to our community—including people who have trained at Stanford or in the Chicago area—say this is the best system they've ever seen."

Physicians responding to a recent St. Joseph survey were nearly unanimous in saying they would not want to go back to a paper-based records system. Ninety-five percent said they liked being able to access hospital information from their offices; more than 60 percent said the new system increases their productivity. Similar surveys are being conducted in PeaceHealth's other regions.

Meanwhile, this fall we implemented the final CHR go-live in our Longview, WA, region. The past six years have been sometimes tense and arduous, but we know that developing the CHR was the right thing to do, both for PeaceHealth and the patients and communities we serve. □

☎ *For more information, contact Dr. Haughom at 541-686-3759; e-mail: jhaughomdr@peacehealth.org.*

NOTES

1. Florence Nightingale, *Notes on a Hospital*, 1873.
2. See Erica L. Drazen, et al., *Patient Care Information Systems*, Springer-Verlag, New York City, 1995, pp. 2-6.
3. D. E. Detmer, ed., *Computer-based Patient Records: An Essential Technology for Health Care*, 1998 ed., National Academy Press, Washington, DC, 1991.
4. The study can be found at http://gartner6.gartnerweb.com/public/static/aboutgg/pressrel/072999spend_rise.html
5. Rob Chandra, Mark Knickrehm, and Anthony Miller, "Healthcare's IT Mistake," *The McKinsey Quarterly*, no. 4, 1995, pp. 91-100.