Where Are They Now? CPR Leaders Assess Their Progress

by Anne Zender, MA

Five years ago the first recipients of the Davies awards showed us successes of CPR systems across the country. Where are they now? This article catches up with these CPR leaders.

Is your job exactly the same as it was five years ago? For most HIM professionals, the answer would probably be "no." The healthcare landscape has changed considerably since 1995—the Internet, HIPAA, Y2K, and other developments have altered the way we work in many ways.

How have the changes of the last five years affected those leading the way in the development of the CPR? To find out, we followed up with the three organizations first recognized by the Nicholas E. Davies CPR Recognition Program. Launched by the Computer-based Record Institute (now CPRI-HOST), this program has highlighted lessons learned from successful CPR implementations across the country. In 1995, the program recognized these organizations during its first symposium:

- Columbia-Presbyterian Medical Center, New York, NY
- Intermountain Health Care (IHC), Salt Lake City, UT
- Department of Veterans Affairs (VA), Washington, DC

The *Journal of AHIMA* caught up with representatives of these organizations to see how things have changed in the last five years. In this article, you'll see how they have met the challenges we're all facing.

Columbia Presbyterian—Rolling to the Web

Sharing clinical data has long been the key focus of Columbia-Presbyterian Medical Center's Clinical Information System (CIS). In 1995, CIS included a central patient database, a dictionary of data elements, and a system that automatically monitored patient data. The system was designed according to the principle that patient data is a shared resource that required information integration, standardization, and monitoring for quality.[1] In the last five years, the system has become part of a Web-based Internet system known as WebCis (for more about WebCIS, see the September 1999 Journal of AHIMA, vol. 70, no. 8, p. 32).

We interviewed Stephen B. Johnson, PhD, associate professor of medical informatics at Columbia University, about the changes he's seen in the past five years.

Q. How has your system helped your organization meet its goals in the last five years?

Johnson: The system provides clinicians with information needed to care for patients, such as:

- results of current visit—laboratory, pathology, radiology, etc.
- a longitudinal record of clinical information from past visits, such as discharge summaries, diagnoses, and so on
- progress notes from other clinicians to enhance communication
- management of patient/provider lists for accurate identification of responsible parties, coverage, etc.

We continue to integrate data from a wide range of clinical applications. We add value by displaying the data in more convenient ways (for example, spreadsheets of lab data), providing new functions (like patient list management), and capturing new data (such as progress notes).

Q. How have changes in technology, like the proliferation of the Internet, affected the development of the system and the way you use it?

Johnson: As part of a Y2K upgrade of clinical systems, the system has become fully Web-based, allowing access from any computer with a Web browser. This enables clinicians to access data off site and also allows patients to transmit health status data and access their own records (using appropriate security measures). The change was easy to make; only the front-end application had to change. The repository, dictionary, and data transfer interfaces remained the same.

Q. How would you describe your progress since 1995 in understanding and fostering user acceptance of the system?

Johnson: Before rolling out the new Web-based system, we did extensive presentations to clinical departments about new features, security issues, and more. We also had personnel circulating in clinical areas during the deployment to ensure a smooth transition. The lesson learned is that public relations are vital to the operation of a CPR. We currently monitor our progress via weekly meetings with user groups and an online suggestion box.

Q. Did preparations for Y2K last year have any impact on the evolution of your CPR system?

Johnson: The attention to Y2K enabled our group to retire old systems and move to more advanced technology, such as moving legacy data into the relational database and providing access only through the Web interface.

Q. What are your organization's goals for the future in terms of the CPR? What do you think the effect of emerging issues like the growing popularity of the Web and HIPAA will be?

Johnson: We are pursuing an effort to address medical errors using the decision support system. We are actively involved in HIPAA policy and security issues and intend to be fully compliant when these regulations become finalized.

Intermountain Health Care—Envisioning a Next-generation System

IHC's CPR system is the product of more than 30 years of research and development that began with a clinical information system at LDS Hospital in Salt Lake City. In 1995, it was recognized as a computer-based record system with a strong emphasis on data quality, real-time data collection and point-of-care service. Today, IHC, an integrated health system that serves more than 50 percent of the population in its area, is already planning its next move—to a system that incorporates today's (and tomorrow's) technology. Peter Haug, MD, codirector for medical informatics for the urban central region and associate professor of informatics at the University of Utah, explains.

Q: What's changed in the last five years? What kind of goals has the system been supporting?

Haug: One big thing that has happened is that since 1995, we've developed a physician division that cares for IHC-insured patients. This has added a new dimension to the way we manage information. We also are designing an outpatient system for clinics. This information system, over the years, has taken on a life of its own and will succeed the existing system. Why change the system we have? The existing system was and is very good, but it's a hospital information system, focused on the inpatient setting and based on encounters. As care moves to the outpatient arena, we need a longitudinal system with a complete view of the patient in many settings. The current system has continued to be of great use in the medical arena; it has been very functional and remains so. And it is a model and a great proving ground as we develop our next-generation system. The goal is to leverage the lessons learned to construct a system to reflect new realities in healthcare.

Q: How has new technology contributed to the evolution and development of a new system?

Haug: One of the things about the existing system is that it is 1980s mainframe technology. One of the things we want to do is leverage new opportunities in technology. We believe that the best way to go is to use large database products and modern hardware and Internet technology, which look very promising for what we want to do. For instance, the Internet has made networks more reliable and available. As a result, IHC has developed a large wide-area network, an intranet about 300 miles wide, during the last five years. It is our vehicle for healthcare computing and a perfect environment for using Internet technologies.

Q: What about user acceptance? How have your approaches changed there?

Haug: I hope we continue to learn how to foster user acceptance. To that end, today we are using a very different model of development, using consensus building among long-time and potential users of the new system. We are finding out what worked and what didn't. Now, more than five years ago, people have more exposure to computing environments. We can find out what people think will work. We do some surveys, asking focus group participants to review vendor offerings and building design groups from major regions.

Q: Like many others, IHC spent time preparing for Y2K. How did that preparation affect your system development?

Haug: Yes, Y2K was real, it was there, and we spent time and effort on it. It clearly kept us from evolving our new system. On the other hand, it allowed us to do a good inventory and look at what users were using successfully. That proved advantageous in the development of the new system.

Q: As IHC develops a new system, what else do you see in its future?

Haug: We'd like the CPR to be all things to all people. Our users have requested everything, and what they've asked for is beyond what we would have imagined. The new CPR will have a list of services—all the usual things, plus some new initiatives for patients that allow them, say, to review and edit their record online. As for HIPAA, we are planning to comply with it. It's already clear that some HIPAA-mandated aspects of patient confidentiality coincide with what we believe in. We want to evolve a system that can do due diligence in serving all those goals. We won't know until the final rules are out how it all fits together. One thing we think is important is taking clinical data with no patient identifiers and using it for quality assurance purposes by aggregating it. Since 1995 we have added an enterprise data warehouse. That's one of the best ways to ensure quality—to review care given and analyze it carefully. We will continue to develop a data warehouse, which manages data securely and confidentially but allows us to study best medical practices. That's the piece I wouldn't have predicted in 1995.

Department of Veterans Affairs—Reaping Benefits of Real-time Information

The Veterans Health Administration's (VHA) reach is vast—encompassing 173 medical centers, 450 outpatient clinics, 131 nursing homes, and 39 domiciliaries (residential facilities for rehabilitation and treatment).[2] Its CPR system must share and exchange data throughout the system and with other government organizations as well. Flexibility and portability continue to be bywords for the organization five years after its recognition by CPRI. We spoke with experts who are involved with various aspects of the system on what's next:

- Clayton Curtis, MD, PhD, director of clinical informatics, VA New England Healthcare System
- Tana Defa, director, clinical desktop services, Office of Information, VHA
- Ben Davoren, MD, PhD, oncologist and clinical architect, Office of Information, VHA
- Rob Kolodner, MD, associate CIO, Office of Information, VHA
- Becky Monroe, educational project manager, Office of Information, VHA

Q: In what ways has your CPR system helped the VA to meet its goals?

Davoren: If you look at three of the major missions of VHA—patient care, research, and education—you can see how the CPR has affected all three, although some are hard to quantify. For patient care, the system has facilitated the goal of coordinating care among providers at different locations. As far as enhancing legibility and timeliness, it's been extremely valuable. For research, the CPR has made data more standardized and legible. People can get to information more easily and remotely. For education, that's also hard to quantify, but it has helped staff, residents, and interns in terms of increased communication. As far as more local goals, we are required to report certain performance measures, and the CPR helps us quantify numbers of patients, patients who have received certain tests, etc. Similarly, for quality assurance projects, data is in one place and is more complete with time.

Defa: In addition to the major missions, the CPR helps us in a number of other areas. One of our most important goals is patient safety. The CPR helps enable decision support tools that help ensure patient safety, such as order checking or

notification of an event. The CPR has helped us improve compliance with official directives and also helps enhance clinical management efficiency with a variety of ways to record progress notes or allow for dictation. We have important access to information for disease management and support for ambulatory care activities such as screenings. Finally, it allows access to data across facility boundaries. Patients who go to multiple facilities can have their data viewed by different providers in other locations within the VA.

Q: Has the Internet been a boon in dealing with some of these issues?

Curtis: Actually, we have applied much Internet technology to the intranet, in many cases because of security reasons. We have applied Internet networking technologies to our systems. There are different ways of dynamically looking at data across sites using a Web application. We also have provided education to employees and clinicians using Web technologies.

Kolodner: We're exploring Web-based technologies. We are exploring Web based approaches to many things, depending on their appropriateness. Some may be used on the Internet and some on our intranet.

Defa: For example, some processes—ordering, order checks—require real-time activity. That type of process is not well suited to current Web browser technologies. The interesting thing has been that we've been actively involved in using Internet technologies to help us answer questions or find solutions. We might be stumped about an issue, but we have real-time access to information. Also, we can have added capabilities to link our CPR to information at the point of care—like reminder software that has links to the Internet—so providers can have access right there to the relevant information. We'll see an explosion of information available to point-of-care providers.

Q: What kind of progress have you made with user acceptance?

Curtis: Ironically, we have made very little progress since 1995 because of the excellent job we have done historically with training. We understood many of those things well before 1995—going back 20 years, we have focused on knowing what users wanted and needed. It has always been a major thrust. The environment has changed, but objectives and understanding of user acceptance hasn't changed much. It's just more intense.

Monroe: We did a study of what fostered user acceptance, and one-to-one training was the biggest factor. Our sites have been active in doing that. Also, we've found that continued training efforts help our users keep up with enhancements. Without regular update training, users tend to use software the way they did the first time, and they need management support for time to attend training to learn to use the system to their best advantage. We still have occasional issues with users who don't type or don't want to type, but the advantages of record availability and legibility of notes tends to cancel that out.

Q: How did you fare with Y2K preparations?

Defa: Each application in the system had to be evaluated for Y2K compliance. There was a period of time, probably six to eight months, where Y2K had a huge impact on delivery of other software, especially in the rate of time we were delivering enhancements to the system. We did not deliver enhancements from October 1999 to the end of January 2000. Usually we deliver enhancements to our CPR every eight to 10 weeks. Most people can tell you we did not have any Y2K difficulties. It was a significant level of effort that resulted in a nonevent.

Q: What's next for the VA? Where do you go from here?

Kolodner: Dr. Thomas Garthwaite, the VA Under Secretary for Health, has said that we want to use the system to interact more closely with customers. We expect that the person who will have the most complete, lifelong medical record for a veteran is the veteran. They will have the information they need, including a copy of key parts of their medical records. This will enable them to be more active participants in their care. So, in the future, we expect much more connectivity to the outside.

Davoren: In a real sense, as technology changes, other organizations and vendors will catch up, and we will see a need for interoperability and convergence that requires global standards. This will help all of us to get to the same place. We want to make sure the CPR is more than a data storage tool. I see a number of drivers that will affect the evolution of the system. Patient safety, making our healthcare processes dynamic, interacting directly with patients, and evolving to a more modular information system that is open standards-based, interoperable, and portable—these will all be drivers.

Defa: HIPAA provides some guidance but also could create dilemmas. It mandates strong security, privacy, and control of the record, but also promotes patient record access. That requires a great deal of coordination. From an implementation perspective, one of the things that has made our CPR successful is a close relationship between our national development, customer service, and training teams. In the future, we need to continue to ensure that training runs hand-in-hand with customer service and development efforts.

Monroe: From a training perspective, we're working toward a similar team effort at local sites. We started introducing a super-user concept with every user being assigned a person to help them, but at this point, we need a team consisting of clinical staff and IT staff to customize the software to its maximum benefit in each clinical area.

Davoren: Communication directly between front-line users and programmers has been a hugely important dialogue and resource, at the facility level and the national level. Direct communication, rather than indirect communication, has been absolutely critical to our continued progress.

Editor's note: For more about the VHA installation, see: Kolodner, R.M., ed. Computerizing Large Integrated Health Networks: The VA Success. *New York: Springer-Verlag, Inc., 1997.*

Note

1. Johnson, Stephen B., et al. "A Technological Perspective on the Computer-based Patient Record." *Proceedings of the CPR Recognition Symposium.* Bethesda, MD: CPRI, 1995.

2. "Veterans Health Administration." VHA home page. Available at http://www.va.gov/About_VA/ORGS/VHA/index.htm.

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