information edge

The Patient Safety Institute: Clinical Integration Rocks

EXECUTIVE SUMMARY

If your kids have burned a CD with music downloaded from the Internet lately, you already have an idea how the Patient Safety Institute (PSI) works. Using the same technology that's spawned millions of homemade rock CDs of bands with names like Insane Clown Posse, PSI is seizing the generational moment to radically change how patient information is shared among physicians, patients and other players in the healthcare industry.

PSI's objective is to provide an inexpensive utility that allows physicians to view patient information at the point of care—or wherever they need it—using real-time, secure connections anywhere there's an Internet link. The noble goal: to dramatically improve patient safety (save lives and reduce injuries) as well as reduce cost of care and do it on a national scale (see sidebar on page 4).

While cutting-edge technology plays an important role, the PSI concept relies on much more than gee-whiz technology, however. Its real model is the VISA-card network. Dee Hock, founder and CEO Emeritus of VISA, who helped create the banking and retail consortium 30 years ago, is a top advisor to the PSI board. That's because the greatest roadblock to PSI's vision is not technology, but getting disparate constituencies to agree on a governance model where players can work together in a trust environment (an environment where physicians, hospitals and patients trust one another enough to readily share information on common patients with the patient's consent).

Only a year old, PSI, a non-profit 501(c)(3) organization, has already established a working demonstration with ER physicians at Swedish Medical Center in Seattle. In addition, support for the family practice physicians is now being rolled out. Other, more regional, plans are in the offing. PSI has set an ambitious goal of undertaking several statewide public/private healthcare network utility initiatives in 2003 before going national two years from now. The time may be right. Like the Leapfrog Group, which rose to prominence almost overnight by pushing patient-safety strategies providers were too hesitant to embrace, PSI may be the kind of out-of-the-box thinking the industry needs and physicians want.

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PATIENT SAFETY INSTITUTE

Partners Working Together for the Good of Patients

Trusted network

PSI is a national collaborative of physician, hospital and consumer leaders working in a private-sector, non-profit initiative to reduce patient adverse events through a secure and "trusted" communications network. Its aim is to deploy a VISA-like communication network based on existing technology that provides a base of real-time, secure, patient-centric clinical information in five areas critical to physicians at the point of care:

- Problem lists/diagnoses
- Laboratory results
- Medications
- Allergies
- Immunizations.

Current PSI users are already collecting and distributing clinical data beyond the PSI base data.

PSI aims to replace a manual information-sharing system that today often relies on fax, courier, retest or guess and replace it with one that enables electronic retrieval of relevant clinical information instantly at the point of care. When a patient arrives at the ER, for example, physicians would love to have all the relevant clinical information from other facilities the patient has visited. When a primary care physician refers a patient to a specialist such as an internist, the patient almost always has to fill out another personal history—or have the office retrieve the information from a hospital, for example, via fax or courier.

Using peer-to-peer parallel processing—a technology that allows multiple computers to see each other as a single computer and therefore easily share files (such as music or medical information) on the Internet—PSI eliminates time delay and allows access to the information via a Web browser interface. Without the PSI solution, just locating and gaining access to many sources of information is extremely time consuming, expensive and problematic, as described above.

Founded in December 2001, PSI's initial funding comes from visionary Partners, each of whom contributed a non-recourse loan to PSI for completing the planning, designing and implementation of the demonstration site. The partners include: Avaya, Cingular, First Consulting Group, Hewlett-Packard Co., Netegrity, SeeBeyond, Teletech, WilTel Communications and most recently Dictaphone, with others expected to be announced soon. The board of directors provides direction with representation from patients, physicians and hospitals.

Luther Nussbaum-Chairman and CEO, FCG

FCG has provided the technical project oversight, integration and implementation for the PSI demonstration sites. "The concept of PSI speaks great things, a higher purpose," says Luther Nussbaum, FCG's chairman and CEO. "Even if we don't make money, the accomplishment will have a major impact on the people we serve. As the Hewlett-Packard slogan says, 'Do well by doing good.' This was the right place to put our energies and money."

Nussbaum says the role of the PSI board is key to its success.

PSI Principles

- Participation must be equitably open to all individuals and organizations that materially affect patient safety.
- Deliberations must be conducted, and decisions made by, by bodies and methods that reasonably represent all such parties, controlled or dominated by none.
- Individually identified data must remain the property of that individual and must not be disclosed or disseminated to others without that individual's consent.
- All participation shall be voluntary with the right to withdraw.
- Any data accessed for the development of improved health or patient safety must be de-identified and remain under the control of PSI.
- PSI operation shall be funded from the benefits produced for participants.
- PSI will be designed and will function to enable and enhance community-based collaboration for improved health and patient safety.

"Early on, Dee Hock said this inability to share medical information is not a technical problem but an organizational problem. We're trying to attack it in an open way. The technology to make PSI successful is very much within reach and works—as evidenced by the fact that VISA exists, although VISA didn't have to layer as many transactions."

Non-exclusive

Daniel Winship, MD, vice chancellor for health affairs at the University of Missouri Columbia, CEO of University of Missouri Health Care and a founding PSI board member, says the patient-centered aspect of PSI snared him right away. "As a means of transferring standardized patient information to anywhere for purposes of quality of care and safety, only with the patient's approval, with fail-safe security—and without cost to the patient. That was pretty appealing to me," he says.

Daniel Winship, MD Vice Chancellor for Health Affairs and CEO, University of Missouri Health Care, Columbia, MO

"I saw in PSI an innovative and very imaginative approach to the distribution of appropriate information related to patient health and illness. It was not motivated by profit, but only by quality of care. I was also impressed by other members of the board who signed on," says Winship.

A key differentiator from other community health networks: the multi-faceted constituencies on the board, including consumers, physicians and hospitals (see sidebar). Maintaining that balance will be key as PSI evolves in its governance structure. "You can't exclude people. PSI will only be as strong as its members," Winship asserts.

To facilitate expansion of PSI nationwide, PSI will offer access to the system through publicly available, open-standard technology that's platform and software independent. The idea is to make it community-driven by tailoring PSI principles (see sidebar on page 2) to specific communities.

Swedish message

To participate, a patient, physician and hospital elect to be a part of PSI. Patients opt in at no cost by approving physicians who can view their PSI clinical data. Participating doctors use whatever tools they wish—printed report, clinical workstation or mobile, handheld device—to request information about a patient. That query is automatically authenticated and the information is provided in real time via encrypted transmission.

A patient's medical information is updated locally through existing clinical systems each time the patient visits a doctor. Patients will soon be able to view their PSI information and even contribute comments to it.

SWEDISH MEDICAL CENTER

PSI's demonstration site is Swedish Medical Center, a 1,296-bed, three-hospital—Swedish FirstHill, Swedish Providence and Swedish Ballard—integrated delivery network in Seattle. Because one of the hospitals is a new acquisition, the PSI initiative became a welcome avenue for immediate integration. To demonstrate the capability of the PSI utility for merging independent, disparate systems and hospitals, PSI chose to handle each facility as an independent hospital—providing and retrieving data separately in support of real-time access to

The PSI Board

Physician Community

- Jack C. Lewin, MD, CEO, California Medical Association
- William F. Jessee, MD, CMPE, president & CEO, Medical Group Management Association
- Richard F. Corlin, MD, past president, American Medical Association

Hospital Community

- Don C. Black, president, Child Health Corporation of America
- Daniel Winship, MD, vice chancellor for health affairs at the University of Missouri Columbia, CEO of University of Missouri Health Care
- Karin Dufault, SP, PhD, RN, chairperson, Providence Health System and trustee, Catholic Health Association

Patient Community

- Twila Brase, RN, PHN, president, Citizen's Council on Health Care
- Jane L. Delgado, PhD, president & CEO, National Alliance for Hispanic Health
- Linda F. Golodner, president & CEO, National Consumers League

a comprehensive patient-centric view of the medical record.

"The PSI network is incredibly useful and time saving, especially in the ER, where you need to immediately sift through a myriad of factors and charts," says Meera Kanhouwa, MD, medical director for information services at Swedish Medical Center and the center's lead clinician on PSI. "Having PSI around made it so much easier to care for my patients the last two nights," she says, referring to her stint Christmas Eve treating patients in the ER—and looking up their laboratory results and other reports online for the first time.

Call back during business hours

Two of Swedish's hospitals have completely different HIS (hospital information systems)—one runs Siemens SMS and the other IDX Lastword—and they can't talk to each other, says Kanhouwa. "If I'm at Providence, a campus that uses IDX, I cannot get patient information on the computer. I have to call medical records and have them fax me specific information. It's a process that takes a long time," she says.

Typically, access to such records is restricted to business hours when the medical records department is open. For a physician working the ER at 3:00 a.m. on Christmas Day, PSI was the only way to retrieve that information.

PSI's screens provide 75% to 80% of the information a doctor needs to summarize a patient's recent history, according to Kanhouwa. "Once a physician looks at the summary screen, he or she has the majority of data needed at a quick glance." The summary page includes the patient's problem list, medications, allergies and laboratory results.

More detailed screens offer in-depth clinical information about patients, including histories, physicals, discharge summaries and X-ray reports. "They truly help you in adjusting an initial approach toward patients," says Kanhouwa, who accessed the information on a "plain-old PC." Such PCs are networked throughout Swedish Hospital's ER and nursing floors to provide clinicians with access to the health system's intranet.

While Swedish's existing in-house system allows access to any medical records housed in that particular facility's legacy system, PSI expands that by providing secure access to all medical records in the three hospitals over a simple, secure, private Internet connection.

Choose your tool

End-user hardware depends on a clinician's workflow. "If you're in an ER like me and have access to a desktop PC, you don't necessarily need a handheld. But if you're a family practitioner practicing at a variety of clinics and hospitals, then you need a mobile solution, which PSI makes possible. Swedish selected Palm Pilot PDAs for its residents," says Kanhouwa.

Swedish is in the final stages of rolling PSI out to as many as 150 physicians, including all ER doctors at three campuses plus a family-practice residency of 60 residents and 25 attending physicians and faculty.

Those physicians like what they've seen so far because "it's a much easier format to get information," she says. "Physicians are very happy with the way PSI is designed," says Kanhouwa, adding that the old notion that physicians resist computers is misinformed. "Physicians resist anything that increases their work or slows it down. Docs will use any kind of tool that helps them work better, faster and smarter," she says.

"I've been working in medical informatics for 10 years. Many vendor applications are

Community-sized Savings

Communities that have agreed to collaborate and share clinical data at the point of care have achieved hard evidence of substantial savings. Early results from communities such as Indianapolis, Santa Barbara and others are showing the following savings:

- Diagnostic tests were reduced from 12% to 20%;
- Emergency department charges were reduced in excess of 5%.

Interesting observations from one community clinical-data-sharing collaborative:

- One of seven admissions resulted from missing information in emergency rooms or primary care settings;
- 20% of lab and x-ray tests were duplicates because of retrieval barriers;
- 11% of the time the same drug, lab test or radiology exam was ordered; half the time patients followed the duplicate instructions;
- One of four prescriptions taken by a patient were not known by the primary care physician.

Other observed but not-yet-quantified savings include decreased adverse drug events and hospital admissions, improved quality due to fewer missed lab results, and efficiencies in provider practice including reductions in time spent by staff tracking down results and other related administrative tasks.

over-engineered and far too complicated. They're non-intuitive and cumbersome. A doc is mainly interested in how to get information. It should be one or two clicks away. These [ease-of-use issues] are things that are never addressed—it's the biggest flaw industry-wide," asserts Kanhouwa.

Besides being easy and intuitive, clinical applications should require minimal training, another reason why the PSI application is so useful, she says.

Leave the data alone

What really sets PSI's query system apart from others trying to similarly link disparate IT systems is that PSI will never own identified information. "PSI does not create another, separate database. The data is left in its existing, distributed databases. It's purposely designed that way to enable maximum privacy, confidentiality and security of data," says Kanhouwa.

PSI chose to keep patient information behind hospital or clinic firewalls. To gain access requires previously allowed permission. Physicians are credentialed at hospitals with which they are affiliated, and provided a unique password and ID number for use each time they log on.

Twila Brase, RN, PHN, President Citizens' Council on Health Care

For Twila Brase, RN, PHN, patient privacy and confidentiality have become a personal mission at PSI. As president of the St. Paul, Minn.-based Citizens' Council on Health Care (CCHC), an independent, non-profit organization focused on free-market healthcare policy, she is one of the consumer voices on the PSI board.

"It was important for our organization that, if PSI was going to work, it needed to become a tool that consumers could use," she says. "The most important thing from our perspective was that patients would have consent and not be coerced into the system. One of my roles is to assure that patients have the right to choose to be part of PSI and not to be penalized for choosing to opt out." The goal, says Brase, is to give patients control over their personal health information, to give them trust and security.

Free market principle

A key mission of CCHC is to represent consumers by bringing down prices and increasing access, choices and individual control through free-market principles, although the organization also receives funding from practitioners and small business. Important to that mission, PSI is opt-in, meaning that patients choose to join PSI. They don't start out in the system and then opt out if they decide they don't want to be in it. Otherwise, the buyer-seller relationship disappears because the buyer doesn't have a choice.

"As PSI rolls out across the country, it's important that it maintains standards of patient choice and opt-in. Because of the obvious benefits of PSI, my concern is that in the future a health plan might try to contractually require that doctors use PSI. That would in effect restrict patients from using particular clinics unless they were enrolled in PSI, thereby negating the PSI freedom of choice principle," Brase says.

Further, PSI's desire to enhance medical research and discovery by making de-identified patient data available to healthcare researchers makes patient control vital as PSI

Savings look good on paper

ICareConnect, a healthcare not-for-profit in Indianapolis, studied the costs of paper-based clinical messaging-typically laboratory reports, discharge summaries and radiology reports-at 11 hospitals in five local health systems and found that hospitals were paying an average of 80 cents per page. If those paper reports were converted to electronic ones via PSI, even the hospital with the smallest volume of clinical messaging would save a whopping $900,000 yearly!

goes forward. "No patient should ever be required to become a research subject to access care. That's a deplorable thought. Patient choice and consent is critical to maintain the privacy patients want and need if patients are going to have frank discussions with their physician," says Brase.

Lots of horsepower

While patient privacy and confidentiality have always been an issue, such debate wouldn't have surfaced even a few years ago because the technology wasn't yet at a point to make PSI possible.

"This takes a lot of horsepower and network technology that wasn't available till now," says Johnny Walker, PSI's executive director. "The real technical feat is taking all the disparate information sources, reaching inside, extracting only the data you need and then displaying it on the facility's chosen application—HIS or PMS (physician practice management system), for example—and platform."

He says that dropping technology costs have also made PSI practical. "The two servers we use in the back office cost $1 million two years ago. Today they cost $200,000. We use huge arrays of storage that would have been cost-prohibitive two years ago. Plus we couldn't have done the transactions fast enough. Now, peer-to-peer parallel processing has enabled us to achieve what we would have needed a Cray supercomputer for before."

In PSI's initial phase, FCG has built a back-office system that can handle patient information for the entire state of Washington and scale to multiple states.

Also key to PSI today: security has evolved to an acceptable point that all the players, including consumers, have confidence in it. "No one would let us transmit their information if we didn't have powerful encryption algorithms," says Walker. Thanks to Dee Hock and VISA, the public generally does not have qualms (because of VISA's operational track record) with connecting to their bank from a remote ATM and withdrawing funds electronically from their personal account, he adds.

No casual surfers allowed

The PSI technical infrastructure is built upon a private IP (Internet Protocol) network supplied by WilTel Communications. WilTel delivers voice, data, video and IP services for some of the world's largest telecommunications carriers, Internet service providers, global media and entertainment companies. Internet technology makes PSI much easier to use, develop software applications for and integrate with other applications than what VISA had to work with 35 years ago when they began developing their international network.

PSI uses XML and HTTPS—core Web technologies that enable customization and privacy and security, respectively—for its messaging and security. Internet surfers have no visibility into the private PSI network. VPNs (virtual private networks) and firewalls provide an additional layer of security to further protect critical patient information. Back-office technology allows PSI to maintain a "chain of trust" through a full audit trail and accountability of who logged on, who requested what information, what information was stored and when.

PSI back-office uses SeeBeyond switch-integration technology which has several successful country-wide PSI-like initiatives under its belt. SeeBeyond technology translates messaging languages for PSI, and provides a master member index that can identify

Upcoming Events

For information on any of these programs, please contact Scottsdale Institute office at 952.545.5880.

February 17, "JCAHO Standards Update: 2003 and Beyond," Angeline Smeal, R.N., MN, ED, CNAA, will join us to share information on current industry performance within existing 2002 standards, the new 2003 JCAHO standards, and the longer term vision for the self-assessment approach in 2004 and beyond.

February 18, "Health Plan Trends and Forecast," Tom Watford and Steve O'Dell, FCG, provide an overview of the strategic and technology related trends in the health plan market segment and how providers will prepare for them.

February 20, "Revenue Cycle Self Assessment and Benchmarking," Patrick Jennings, Dave Smith, and Leigh Drango, Stockamp & Associates, lead the continuing discussion about best practices in revenue cycle metrics. Updated blinded member survey data provides best practices and stimulates discussion of how members are improving their performance.

February 25, "Continuous Computing and IT Service Management," Dave Dimond and Robert Burgess, FCG, present the people, process and technology challenges and solutions for avoiding systems outages and maintaining appropriate back up plans. The session helps you

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a single patient even when that patient is identified with different patient ID numbers by three or three thousand separate hospitals. Such capability is critical to ensuring patient safety by correlating the correct patient information with the correct patient.

Web technology on top of PSI's private TCPIP—a routing map or protocol for network addresses—network leverages SeeBeyond's products to create PSI's VISA-like performance for real-time sorting, organizing and presenting clinical information.

Conclusion

As elegant as the technology is, it will continue to improve and evolve as PSI remains architecturally open to technology developments and new products. However, it's the combination of results and trust building that will continue to increase the adoption of PSI. Walker is enthusiastic. "Hospitals love PSI because doctors love it, it reduces errors, has the ability to tie in disparate systems, encourages community communication, allows hospitals to gain competitive advantage and it's the easiest way to gain physician buy-in and support for computerized physician order entry (CPOE)," he says. "Additionally, it's a compelling story for any insurer because it significantly reduces costs." Based on insurers' response and comments, Walker predicts insurers will incent PSI expansion and adoption by underwriting PSI use on a transaction basis, a suggestion already made by one insurer CEO, he notes.

Government entities and members from both sides of the Congressional aisle have expressed interest in a PSI public/private collaboration as a quick and cost-effective strategy to lower costs and improve the quality of healthcare. Additionally, PSI provides a strong foundation for a management response network and early warning program. Grant proposals are under review that support using PSI as a vehicle to safely and quickly deliver desperately needed capabilities. PSI has a huge challenge, if for no other reason than nothing like it has even been done in healthcare before on the scale envisioned. That is why having the experience and guidance and of a Dee Hock is invaluable.

Other efforts in healthcare, called community health information networks or CHINS, failed a decade ago because they lacked an independent trusted third party, patient confidence (no patient governance voice) and focus (attempt to normalize the total community health record). PSI starts with five key elements that are already defined by the industry in the HL7 standard, which allows individual organizations to keep their unique data structures. This approach eliminates the need for a technology vendor to change its data-base schemas, which was a problem with earlier CHIN efforts. The PSI approach also allows immediate use of vocabularies such as LOINC—a laboratory-code vocabulary—just as soon as users settle on a standard and start using it. Finally, there's a strong recognition in the healthcare industry that if it doesn't implement this kind of system, the federal government will step in and do it for us—driven by continuing healthcare cost inflation.

If the challenge of establishing a national network for securely sharing patient information still sounds daunting, it is. But for a generation whose kids create their own music CDs, it may not be so difficult to envision after all.

Upcoming Events continued

assess your organizations' ability to avoid system outages, provides leading approaches to disaster recovery and disaster planning, and leading examples of disaster management.

February 26, "Pay for Performance: Bonuses to Physicians for Improving Quality of Care," Beau Carter, executive director, Integrated Healthcare Association, presents the standards that have been adopted by six California payers and are now covering 8 million lives. The collaborative development process, the upside to physicians, and future standards being evaluated are included in this review.

March 5, "Data Center and Help Desk Consolidation," Gayle Vernon Simkin, Office of the CIO, and Duayne Paul, vice president for Administrative and Infrastructure Strategy, CHW, discuss the initiative that took CHW from 22 data centers to 1, and from 19 Help Desks to 1 serving 42 hospitals and 400 service sites.

March 12, "How Recent Pharmaceutical Regulations in Marketing, Advertising, and Training Impact Prescribing," Chet Shemansky, FCG, describes what we can expect to see as a result of changing regulations in pharmaceutical marketing.

March 19, "Annual EMR Survey Results and Industry Trends," Jeff Blair, vice president, the Medical Records Institute and chair, NCVHS Work Group on Computer-based Patient Record presents the results

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Upcoming Events continued

of the MRI 4th annual EMR survey, facilitates a discussion about case study benchmark organizations, and offers his thoughts and predictions about this critical industry trend.

March 26, "e-ICU: The Implementation Story," Ann Marie Cochran, RN, Sentara Health System, has been program manager for this initiative since it's inception and is a former ICU Nurse. She will share the implementation business case and objectives, challenges, results and lessons learned in automating the ICU's at Sentara.

April 3-5, Scottsdale Institute Annual Conference: "Renovating Healthcare Delivery," Scottsdale, AZ, includes 2 days of general and focus sessions and roundtables. The meeting is for all member executives and the fee is included in your annual membership dues.

April 17, "Electronic Health Records Research Report: Quality Outcomes Justify Government Investment," Dr. David Westfall Bates, chief director of General Medicine, Partners Healthcare, Boston, MA, and associate professor in Medicine, Harvard Medical School, associate professor, Harvard School of Public Health, Department of Health Policy, presents his work published in JAMIA, January 2003, comparing the US to other countries in funding and the resulting use of EHRs.

For information on any of these programs, please contact Scottsdale Institute office at 952.545.5880.

HOLD THE DATES:

Scottsdale Institute Annual Conference

April 3 – 5, 2003
Camelback Inn, Scottsdale, AZ

Scottsdale Institute has mailed and e-mailed conference materials. Please plan to attend. Register now for the best rates. For questions regarding the conference, contact the Scottsdale Institute office at 952.545.5880