



Trends-in-Medicine

April 2005

by Lynne Peterson

SUMMARY

Healthcare spending is up 5%-10% this year vs. 2004, with a similar increase expected in 2006. The key items on shopping lists: EMRs, PACS, and bar-coding. ♦ The federal government push for healthcare IT is viewed as mostly rhetoric at this point, but it is helping spur hospital IT investment, and eventually federally-mandated standards are considered likely. ♦ Cerner's focus appears to be on CPOE, but that's not where CIOs are focusing today. ♦ Eclipsys has improved slightly, but it is expected to be acquired by another company, not remain a standalone. ♦ Epic, which is expected to remain a standalone company, was praised by CIOs. ♦ GE was described as the company to watch, but its weakness is its single-vendor approach. ♦ IDX got mixed reviews, with customers worried that its big U.K. contract will take funding and experts away from U.S. projects. ♦ McKesson is seen as "slightly improved" over last year, and it got good marks on implementation and service, but customers still report problems. ♦ Siemens appears to be holding its own, with its reputation unchanged and improved product, but flat market share.

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HEALTHCARE INFORMATION AND MANAGEMENT SYSTEMS SOCIETY

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Dallas, TX

The Healthcare Information and Management Systems Society (HIMSS) is an organization exclusively focused on providing leadership for the optimal use of healthcare information technology (HCIT) and management systems. More than 14,000 individuals and about 220 companies belong. The annual HIMSS meeting is the premier HCIT conference in the U.S. Attendance in 2005 matched last year's attendance, which was a record year, with more than 20,000 attendees and more than 700 exhibitors. In addition to lectures and exhibits, 25 Chief Information Officers (CIOs) were interviewed, including some using every major vendor.

Budgets and purchasing

Will healthcare information spending really take place? CIOs said their IT budgets are up slightly this year over last year, and the expectation is that they will also increase slightly in 2006, though CIOs were quick to point out that this is not certain yet. On average, sources said their budgets are up 10% in 2005 over 2004, and they expect budgets to be up slightly next year as well. HIMSS President Steve Lieber agreed, saying, "Across the industry, on average, budgets are increasing 4%-5%, but there are wide variations. There is clearly a move to greater investment in healthcare and technology." An Illinois CIO said, "Our budget is up 3% over last year, and 2006 will be up as well mostly because we keep adding products that need maintenance."

The key items that CIOs said they plan to buy this year are: EMRs, PACS, and bar-coding. Beyond these, purchases include a variety of items, from RFID (radio frequency identification) to storage, wireless, and laboratory systems. A California CIO (building a new, highly wired hospital) said, "We are looking at technology to help clinicians. Doctors have had an aversion to IT, and I want to bridge that by making it easier. One thing I'm looking at is single sign-on... Battery life is too short in most devices...We are implementing RFID on all medical equipment that moves."

Purchasing decisions are being driven, in part, by a desire by hospitals to remain competitive in their marketplace, but that is not a long-term strategy, one CIO insisted. He said, "Our value is based on reputation and quality...The competitive advantage to investing in IT is short-lived (three to five years), but eventually everyone will be there, and it is how you use the system and the results you get that make the difference. I tell physicians there is no safe harbor. If you don't like CPOE (computerized physician order entry) here, you will have to deal with it tomorrow at another hospital. And physicians are coming to the table faster now. Public discussions have helped physicians accept this."

While administrative/financials used to drive purchasing decisions, clinicals are now the driving force. A source said, "Your financial and administrative systems are very mature; there is not much change occurring in that area. The dramatic change in that area has already occurred. Clinical decision support is what is driving purchases now because it is not as mature, and the whole focus on quality is driving a lot of decisions, and then costs. To the extent you can reduce unnecessary or duplicative care you are making the right decisions." A Texas CIO said, "Most hospitals have administrative/financials in place and are focusing on clinicals now. The trick is not to disrupt financials with the clinicals."

The federal government and IT spending

The government push for HCIT is viewed by some CIOs as mostly rhetoric, not reality, but they agreed it is still useful. A Texas CIO said, "It is visionary. It is not reality, but it is still good. You have to get there to survive. It is forecasting and encouragement." A California CIO said, "We are not seeing a push to the extent we want it, but progress will be made." A Florida CIO said, "It is mostly conversation at this point. It hasn't translated into funded work. It is a 10-year plan, and it will translate, but not at the pace we would all like." A Pennsylvania CIO said, "It's rhetoric. The noise helps (hospital) board members and healthcare leaders understand the importance of clinical systems, but not with funding." A Georgia CIO said, "Now, it is rhetoric, but it will become reality." A Midwest CIO said, "It is just rhetoric. There is too much money involved. This thing is bottom-line driven. It will be stick- not carrot-driven." Another CIO said, "The federal government has a club only. It is not spending enough money to make a carrot."

However, HIMSS' Lieber believes it is real, "Money will be used for a number of pilot projects and new initiatives. Everyone recognizes it is seed money, to get things started. The federal government is not going to pay for everything, but what we do want to see is the federal government taking a leadership role in starting things and then the private sector takes over. President Bush has become personally identified with it so he will make sure there is follow-through. The appointment of Michael Leavitt as Secretary of HHS further reinforces that; he was a big advocate of technology in Utah, which is one of the leaders in the country of turning government into e-government. In Utah, you can do a lot of things online, so he very much understands the importance of technology. EHRs (electronic health records) are going to be near the top of the list if not at the top, along with CPOE and wireless technologies...But changes in the U.S. healthcare system are incremental; it doesn't change that dramatically in any part. There are events that cause major changes, but they are rare in healthcare; it is more of a gradual change." A New England CIO said, "It is reality because there are so many people in Washington DC talking about it. I think it means the government will give additional payments to doctors to fund EHRs and will relax Stark regulations." A Cerner official said, "The next four years might be significant

for something to happen, or HCIT may become a Tier 1 issue in the next presidential election...There will be legislative activity the next two or three years, and ultimately this will lead to passage of legislation, but I'm not sure when...The rhetoric is foundational."

A consultant said, "It is both rhetoric and reality. The rhetoric is that the government can push an industry that is very indifferent to change, and the government needs to provide the money to make the change happen. I'd like to see Secretaries of State set the agenda, and the federal government fund the states."

Whether it is real or rhetoric, the government talk about IT is helping CIOs by increasing the value of IT. HIMSS' Lieber said, "All the government talk is raising the profile of IT value. Within a provider setting the CIO knows the value and is a constant advocate. The advantage of having the federal government talking so much is that now everyone – the CEO, the chairman of the board, etc. – is aware of it. They are asking, 'Where is our institution in terms of having the right technology?' The federal debate has brought it into the discussion level in all aspects of healthcare management."

Standards

Everyone wants technical standards for electronic health records, and the industry is moving in that direction. In a speech at HIMSS, Dr. David Brailer, National Health Information Technology Coordinator at the U.S. Department of Health and Human Services, threatened government-mandated standards if the industry can't come up with a single set of standards which include a way for records to be opened and read – with patient authorization – by doctors at different clinics, using different computer systems.

Many CIOs believe the government needs to step in and mandate standards, but most do not think this will happen any time soon. Lieber said, "Right now, I'd say I don't think we will see federally mandated standards. They really don't want to go down that path. All the conversations they are having with us are: 'Industry you need to get your act together and establish a universally accepted set of standards.' A GOP administration generally doesn't go down the path of federally-mandated regulations, and we don't want them to. There are some efforts underway – certainly HL7 and the initiative we do with RSNA (Radiological Society of North America), which is taking HL7 and other standards and putting them into a technical framework people will program into their products. You can have standards, but getting them incorporated into the products is the key." A Texas CIO said, "I hope there are mandated standards because that is usually the only way you get them." A Georgia CIO said, "I think the government initiative will drive us toward standards, but it is two or three years away. I also think there will be federally-mandated standards. If we are serious about connectivity, we need government regulations to overcome the egos and other obstacles." Another CIO said, "I expect standards, but I don't

think that will happen without mandates.” A New England CIO said, “I think it is reality because there are so many people in Washington DC talking about it. Medicare will relax Stark restrictions and fund additional payments to doctors to fund EHRs, so I think there will be true movement forward...There will absolutely be standards. They are being discussed by all organizations. HL7 will lead the way.” A Midwest CIO said, “Eventually, there will be federally-mandated standards. HIPAA was a disappointment in terms of how slowly transaction sets got adopted. There were some unrealistic goals.”

According to *Medicine & Health*, “Observers inside and outside the Congress say that an IT bill may be the most likely healthcare proposal to see enactment. So far, Democrats have offered the more fleshed-out proposal and are pushing for a fairly aggressive federal role in setting standards as well as funding health IT. With a Republican president in the White House, GOP lawmakers are waiting for the administration to take the lead on details...The administration also issued draft standards for e-prescribing under Medicare’s new Part D drug benefit.” Republicans in Congress are pushing legislation that would encourage rapid adoption and widespread use of EHRs. Democrats want to see standards enacted, loan guarantees initiated, and grants expanded.

A Cerner official suggested that the country is in transition from the rhetoric stage to the statutory phase, where legislation could occur. He commented, “When you see polar extremes getting together, that tends to indicate there is consensus...With Sen. Hillary Clinton (D-NY) and Sen. Bill Frist (R-TN) coming together to write an op ed article, it is suggestive of the fact that there is broad bipartisan consensus on this target, and we are really ready to move to a statutory stage from the rhetoric stage.” He also predicted that state governments would lead the way in HCIT, “State budget requirements are forcing tough choices at the state level that we aren’t seeing at the federal level yet. So, a number of forward-looking governors will be early adopters of IT and lead the way...We are in the early stages of the legislative phase...I think you will see a consensus view emerge that there are (benefits to IT spending).” Another CEO official said, “I think the federal government...will worry about broad adoption – where it wouldn’t happen quickly otherwise – such as rural areas and smaller physician practices. They have to do something there to stimulate adoption.”

A Rand study was expected to come out before the end of May 2005 on the system-wide benefits of automation. A Cerner official predicted this would “emerge as a major proof point of the benefits of this (automation/healthcare IT) approach and the return on investment (ROI) of this approach.”

HIMSS was showcasing two interoperability demonstrations – one ambulatory and the other cross-enterprise – that took HL7 and DICOM and put them into a technical framework, with about 40 companies participating. A HIMSS official said,

“This is really the first time we demonstrated interoperability across a large network and large number of vendors. If these 40 companies made this interoperability a part of their products off-the-shelf vs. this special demonstration, it would be a big enough market share that it would make the market move in that direction. It (the demonstration) is not fully operable on patient data; it is organized on ER encounters... Buyers – the hospitals – aren’t demanding interoperability as all of us did on PCs, but they are moving in that direction. They are starting to understand the importance of interoperability. What we are hearing from the vendor community is the recognition that non-standard is fast becoming unworkable because the marketplace is beginning to demand interoperability. Central systems really do need to be changed. That is the EHR, which is the linchpin. The problem we have is no one can afford to run everything they’ve got; the money is not there. The human resources are not there to take all the peripheral systems and dump them and bring in all things with interoperability with the core system. There have to be patches in the near term, but, over time, as people start to make new buying decisions, they will look at this and come to different conclusions than in the past.”

The demonstrations started with radiology and then expanded and now include cardiology, oncology, and lab. Participating vendors are able to claim compliance to IHE (Integrating the Healthcare Enterprise, www.ihe.net) integration profiles by publishing an IHE integration statement for each product. A showcase official said, “We did a survey and found recently that 92% of respondents were aware of IHE.” Interestingly, McKesson and MediTech were not participating this year, but the showcase official said, “They are very interested in participating next year.”

IHE doesn’t create standards. Rather, it is an organization that promotes the adoption of universal standards such as DICOM and HL7. An expert said, “Our thinking is that this (interoperability) is a work in progress and a continuing effort. We are up to 27 integration profiles. We are also actively involved in standard development...IHE is mostly volunteers and is sponsored by HIMSS, RSNA, and the American College of Cardiology. We figure the cost and divide by N. That’s how we decide what profiles, then vendors implement them, and we test them. You will see IHE integration profiles in specs now...What’s happened is that we started simple, with DICOM in radiology and HL7 for total enterprise. We broke a big problem into smaller pieces, and now it is coming back together...We have now gone from individual domains and are looking at the total domain...We need not just standards but implementation guidelines and protocols.”

HIMSS has been demonstrating interoperability for a number of years, but little of the interoperability is actually available in the marketplace. A source said, “For all the profiles that are more than a year old, you have a large amount of vendors and a large number of hospitals who have deployed it. There are at least 60 success stories so far. Many of these are in the radiology space, but we are now seeing lab, cardiology, etc.,

exploding...There are a large number of products in the radiology space, and there have been newer announcements in the rest of the space, which is rapidly expanding." Another expert said, "Plug and play is a controversial idea. We proved the approach in radiology."

Telemedicine

Telemedicine is one area where CIOs clearly are *not* focusing this year. A source said, "I'm not sensing a dramatic trend across the healthcare systems. Telemedicine already operates in a lot of places where there is a need and a limited amount of service. Medicine practiced over long distance works in remote, rural, underserved areas, and you see an increase in consultations across distances as you have specialists providing support for hospitals that don't have that level of specialization. But we are not sensing a dramatically increasing trend...The reading of images is the one place where we see a significant amount of telemedicine. The definition of telemedicine has changed. It used to be telemedicine utilized specialists or specialized care originating from one place and care delivered. Now, what we see is more a different location of employment. Images were read down the hall, across town. Now, by virtue of the Internet, they can be read just as quickly and accurately – and with the same resolution – half-way around the world. Telemedicine filled in gaps in the past, and now it is a method for controlling costs." Another CIO said, "We are doing remote PACS and connecting with rural clinics, but we don't outsource, and we don't monitor ICDs at home."

A Pennsylvania hospital has a telemedicine home care project underway (with American Home Telecare) in which devices are put in patients' homes (to measure blood pressure, weight, pulse oximetry, etc.), and the hospital is doing some telemedicine, particularly in radiology. The CIO said, "The home care project is good. We used grant money to do it, and we will spend our own money on it when the grant is done."

Outsourcing appears to be a trend on the decline. A Midwest CIO was sending CTs to Australia to be read because the time difference meant radiologists there were at work when his radiologists were sleeping, "We stopped because the doctors have to be licensed in Illinois and need medical malpractice insurance in Illinois." No other CIOs said they are currently using non-U.S. radiologists, and none plan to do so.

A lot of new technologies are being developed for monitoring patients, such as ICD monitoring at home. However, few sources are monitoring ICD patients at home yet, though a few would like to do that in the future. A Texas CIO said, "We aren't monitoring ICD patients yet. I would like to, but it won't be any time soon." Another CIO said, "We aren't in telemedicine yet, but we will do it in three to five years. And we'll probably do ICD monitoring in three to five years." An expert said, "Home monitoring devices are one thing consumers are likely to see. Those types of devices will create

some great opportunities for people to maintain their lifestyle at home."

Because the telemedicine area is so low on the radar screens of these CIOs right now, sources were not able to identify any companies in the space who have a strategy that warrants watching. One CIO suggested, "We are doing monitoring of ICD patients at home, home telemedicine connections, and a patient portal for reporting FEV, weights, etc., and 35,000 patients use it monthly. We also will be doing more purchasing over the Internet over the next year or two."

The payor perspective

For the first time HIMSS had a payor special interest group (SIG). One of the attendees said his carrier was looking to buy data warehousing and networking pieces this year.

Picture Archiving Communication Systems (PACS)

Surprisingly, many HIMSS attendees were looking to buy PACS, or upgrade existing systems. A Massachusetts CIO said the leaders in PACS are GE, Agfa, and Philips, but if he were to buy a new system, it would be Philips because it is "easy to install, cost effective, and technologically advanced." Another source said, "Siemens is low on the KLAS listing (www.healthcomputing.com), and when hospitals decide what to do they look at KLAS. Stentor is No. 1 in KLAS (for PACS)." A Nebraska CIO recently purchased PACS. Siemens and McKesson were considered, but all four radiologists wanted McKesson, so that is what was chosen." A Florida CIO said, "I'm shopping for RFID for asset management (medical equipment, especially things we rent) and PACS. Right now we do mini-PACS, but we are looking at McKesson, DR Systems, and Fuji. I would like to stick with Fuji, but my superiors are leaning to others. We are not looking at Stentor." Another CIO said, "We recently bought DR Systems because of its integration with MediTech."

Asked why IDX was not on any source's PACS short list, an IDX official said, "We only sell to our own customers today. We haven't gone out and marketed outside our own customer base, and we haven't wanted to. Our best value is buying for RIS (radiology information systems) and PACS. We intend to start that this year. That is why people don't see us outside our own customers."

The vendors

The names to follow in healthcare IT are Cerner, Eclipsys, Epic, General Electric, IDX, McKesson, and Siemens. A variety of other companies, including Misys and MediTech, are big in physician offices or smaller hospitals and clinics. A HIMSS official said, "The trouble is, there are a number of smaller companies that are here...but it is hard for them or even us to get to know them well...Smaller companies are not particularly innovative, but they will be *the* growth area in

terms of numbers of new installations. They may or may not be tops in dollars, just in numbers...But if you can affect care at the physician office level, you will have a bigger impact on the healthcare system than if you try to impact at the hospital or enterprise level."

Will there be more mergers and, thus, fewer players in the future? HIMSS' Steve Lieber said, "There are still a lot of new companies...I think we will answer the question of interoperability before there is a major market dominance by a small number of players...Healthcare didn't start with an EHR and build from there; people started with specific services or procedures, and now things have developed around the perimeter, but no one took care of the core record."

In the administrative/financial area sources put several firms in the "best" vendor category, including Microsoft, MediTech, PeopleSoft, SAP, Lawson, and "tons of smaller vendors." In the clinical area, most sources declined to identify a single "best" vendor. A Texas CIO named Epic, which he uses, as the best, saying, "They are delivering not only vision but practicality. And they have the most integrity." An Arkansas CIO said, "They all – MediTech, Cerner, Epic, and Eclipsys – have something better." A Pennsylvania CIO said, "Cerner is the best because it has been around a little longer, is more integrated than the others, and the depth of the content in terms of evidence-based medicine is beyond the others." Another CIO said, "Epic and MediTech are the best at clinicals." An Ohio CIO said, "Any of the big guys are okay. A lot of them are pushing the envelope in marketing what doesn't exist."

A survey discussed at HIMSS asked 1,000 doctors what companies they would look at if they had to get an EHR tomorrow. The survey found that doctors generally are not aware of small companies. They pointed instead to: GE, Siemens, and Epic. A source said, "That is who they would call, but probably not who they can afford."

CIOs are divided on whether "best of breed" or single vendor purchasing is the way to go. An interesting new term was coined and appears to be guiding many CIOs: **best of cluster**.

- *HIMSS President Lieber*: "If we don't answer the question of interoperability, it will be single vendor. If we answer interoperability, then it will be best of breed... It depends on where things go. It depends on when you buy. If you buy right now, I think people will tend to single vendor because they know the applications will talk to each other. As we, hopefully, answer the questions on interoperability and achieve true interoperability, then you can move back to best of breed."
- *Consultant*: "Large hospitals are choosing best of breed, but small to mid-size hospitals are going with single vendors."
- *Arkansas CIO*: "We have a single vendor, and we are staying with a single vendor."

- *Texas CIO*: "I think the trend is to 'best of choice' because no single vendor can do everything. If one could, I'd use that in a heart beat."
- *Florida CIO*: "Best of breed brings integration issues that never go away. Best of cluster is next best to single vendor."
- *CIO*: "No one vendor can meet all the requirements, so it is still best of breed."
- *Ohio CIO*: "It's better to hate one vendor than two."
- *Georgia CIO*: "I prefer a single vendor, but if the application is deficient, we will go for best of breed."
- *Illinois CIO*: "Interoperability is a good idea for the future, but we need a single vendor to get it today."
- *Nebraska*: "We are considering a core change to best of breed or best-fit for CPOE and EHR. Our short-list is Siemens' Sorian, McKesson's Paragon, and QuadraMed. We are half Siemens and half McKesson now. We don't use any IDX because IDX won't talk to you unless you have \$10 million to spend. Cerner is too expensive, too."

Comments about the choice of vendor included:

- **Cerner.** Dr. Donald Crandall, Vice President of Clinical Informatics at Trinity Health in Michigan, is a Cerner customer. He said his healthcare organization switched from McKesson and Eclipsys to Cerner because "Cerner had the best architecture," adding, "You can buy best of breed in particular areas, but if it is integration you want, our opinion is that Cerner is the place to be." He estimated the move saved Trinity \$18-20 million in Phase I. Three facilities have implemented CPOE, two more will go live by summer, and then another four facilities will go live in the next fiscal year."
- **Epic.** A Midwest CIO said, "Cerner tried high pressure sales with us, and that turned us off. Epic asked, 'How can we help you?'"
- **Eclipsys and McKesson.** Gary Jump, CIO of Our Lady of the Lake Hospital in Louisiana, an ~850-bed hospital, switched to Cerner from Eclipsys and McKesson. He said, "We are pretty sophisticated at building interfaces... One of the reasons we found Cerner is that we tried to do medication administration through interfaces, and it is impossible. You just can't pull it off safely...McKesson acquired so many projects that it was hard to determine day-to-day what was the key product...Eclipsys was struggling with the transformation from a nursing system to full-fledged area technology...I'm not buying Cerner for its products today, but for five years from now...You have to make decisions based on products and maturity in a sense, but you have to make the decision about what the investment will bring you in five to 10 years and who will make that happen over time."

- **IDX.** A CIO explained his choice of IDX over Cerner: “The first time Cerner demonstrated, they gave evasive answers, and we sensed a culture we didn’t like. At the second Cerner demonstration we had the same problem. All of the major vendors are fairly comparable, but the cultures are different, and that emanates from the leaders.”
- **When building a new hospital.** A CIO offered this advice to other CIOs who are building a new hospital:
 - Make haste slowly.
 - Deal with expectations up front.
 - Make sure key people are on board, including the board of directors, medical staff, administration, and nursing. He advised, “Be sure they understand it will be a rough road, costly, and gut wrenching. It will reduce people to tears at times.”
 - Know the building blocks, and make sure you have the most robust EMR before you think of CPOE. CPOE is an add-on to your medical records system.

HIMSS LEADERSHIP SURVEY

The 16th annual HIMSS Leadership Survey of 350 CIOs and other senior IT officials, sponsored by Superior Consultant Company/ACS Healthcare Solutions, was conducted between December 7, 2004, and January 26, 2005, and it found slightly different purchasing trends, and offered insight into other areas.

Key findings of this survey included:

Budgets

The importance of web-based applications continues to decline.

- IT budgets have increased for 76% of executives, and ~80% said their budgets would increase at least 6%.

IT Operating Budget Outlook in 2005

Outlook	Respondents
Definitely increase	42%
Probably increase	34%
No change	17%
Probably decrease	6%
Definitely decrease	1%
Reasons for increase in 2005 IT budget	
Overall growth in technology	77%
Need to upgrade IT infrastructure	41%
Increase in IT organizational strategic plan	39%
Overall budget increases	37%
Need to comply with regulatory changes	26%
Addition of facility/business unit	22%
Ability to prove IT ROI	18%
Business requirements to invest in e-business	8%

- Cost pressures have declined as future business issues from 54% to 40%. A speaker said, “We are seeing bigger budgets, and the cost factor is not as important to the industry as it was.”

Priorities

According to this survey, top IT priorities are unchanged from last year – reducing medical errors and HIPAA compliance. Priority areas this year with the greatest **increase** in importance were implementing ambulatory care systems and replacing or upgrading inpatient financial/administrative systems. Priority areas this year with the greatest **decrease** in importance were upgrading network infrastructure and improving IT departments (services, cost effectiveness, and efficiencies). The top priorities for the next two years remain EMRs, technology to reduce medical errors, and replacing/upgrading inpatient clinical systems.

Only 18% of respondents currently have a fully operational EMR system in place, but 42% are installing EMR hardware/software, and 22% have a plan to implement an EMR, and 17% don’t have a plan for implementation of an EMR. An EHR is not synonymous with an EMR; an EHR is a healthcare organization’s official, legal record of encounters, which includes more than clinical data. EHRs are community, regional, or nationally-based records of a person’s health and wellness encounters, which include the ability of the person or surrogates to access the record and augment it. EHRs require EMRs to feed them and interoperability standards. A speaker said, “We are going to have a challenge hitting the ‘most people with an EHR goal’ in 10 years...I’m not aware of a single EHR that meets the definition anywhere. EMRs do exist; there are at least 115 (in the U.S.).” Lieber warned, “Adoption of EHRs is slow, but our belief is that the pace is picking up and will continue to do so. It still costs a lot of money to adopt new technologies, and that is not available in all (healthcare) systems. There is still competition for resources...Radiologists are certainly in the forefront, and they established a long track record of investment and ROI... And that (ROI) is the question every CEO asks. Healthcare has a tremendous service aspect, but it is also a business...so they cannot blindly invest in technology.”

Top Business Issues for the Next Two Years

Issue	Respondents
Reducing medical errors	57%
Patient satisfaction	44%
Improving quality of care	42%
Cost pressures	40%
Improving operational efficiency	40%
Clinical transformation	36%
Medicare cutbacks	35%
HIPAA compliance	31%
Adoption of new technology	31%

To make it easier for healthcare providers to choose an EHR, HIMSS plans to “certify” ambulatory EHRs. HIMSS President Lieber said, “We will specifically focus on physician practice EHRs because that is more manageable. This is a new certification process. It is already operating. The commission was appointed in October (2004), and working groups were formed. (See “Certification Commission for Healthcare Information Technology” at www.cchit.org) The idea is that it will help the buyer, the physician, have a degree of confidence about what they are buying. They will know that some analysis will have been done, and they will know that the application meets XYZ criteria. One of the things we know is that one-physician offices generally don’t have an IT department.” This certification process is not a rating system; it will simply say, yes or no, whether a system meets certain criteria.

The IT applications considered most important over the next two years are: EMRs, bar coded medication management, clinical information systems, and CPOE.

- Currently, only 10% of respondents have CPOE installed, 12% have signed a CPOE contract but not installed it yet, and 77% don’t have a contract or plans for CPOE implementation. A speaker said, “We went to vendors who sell CPOE and asked for users, and we surveyed all those purported users...We found 1% of American hospitals have >50% of the orders being placed by doctors.”
- Among academic hospitals, 31% have CPOE implemented, with 16% more contracting.
- Heart hospitals, using General Electric, were reported to be the leaders in CPOE.
- No surgical hospitals in the U.S. are believed to be using CPOE.

The top technologies over the next two years that respondents intend to implement are PDAs, bar-coding, and speech recognition. Internal security breaches remain a priority and a primary concern, but less than last year; concern with external breaches of security is up 25% over last year.

Key IT Applications for Next 2 Years

Issue	Respondents	Change from 2004 outlook
EMR	62%	Up from 52%
Bar code medication management	55%	Up from 52%
Clinical information systems	52%	Unchanged *
CPOE	50%	Unchanged *
Enterprise-wide clinical information sharing	44%	Up from 40%
Clinical data repository	42%	Down from 46%
PACS	42%	Unchanged *
Point-of-care decision support	37%	Unchanged *
Status of EMRs		
Fully operational system	18%	Unchanged *
Installation begun	42%	Up from 37%
Development plan to implement	22%	Unchanged *
No plans yet	17%	Down from 21%
Don’t know	1%	Unchanged *
Technology adoption over next 2 years		
Hand-held PDAs	59%	Up from 55%
Bar code technology	59%	Up from 54%
Speech recognition	59%	Up from 53%
Automated alerts to clinicians	57%	Up from 51%
Data warehouse	51%	Up from 37%
Wireless information appliances	51%	Up from 47%
Extranet	50%	Up from 37%
Web-enabled clinical process	45%	Down from 48%
Data security technologies	45%	Up from 40%

* ±1% considered unchanged

Barriers to IT Implementation

Issue	Respondents
Lack of financial support	20%
Vendor inability to effectively deliver product	18%
Lack of staffing resources	13%
Proving ROI	10%
Lack of clinical leadership	10%
Difficulty achieving end-user acceptance	8%
Lack of top management support	7%
Lack of common data standards	3%
Laws prohibiting technology sharing	2%

IT Priorities

Issue	IT priorities for 2005	IT priorities for 2004	Projected IT priorities in 2 years
Reduce medical errors	53%	Up from 47%	42%
Upgrade security/HIPAA compliance	44%	Down from 48%	7%
Replace/upgrade inpatient clinical systems	38%	Down from 44%	33%
Implement wireless system	35%	Down from 37%	18%
Process/workflow redesign	32%	Unchanged	32%
Implement EMR	29%	Down from 33%	54%

THE ENTERPRISE VENDORS

Major Vendors

Company	CPOE market share (HIMSS Analytics estimates)	CIO choice of IT for a "fresh start" in a KLAS survey *
Cerner	27%	64%
MediTech	19%	29%
Siemens	11%	46%
Eclipsys	10%	52%
Epic	7%	42%
McKesson	7%	43%
IDX	6%	19%
GE Healthcare	N/A	N/A

* Source: Cerner

CERNER

Cerner's focus appears to be on CPOE. Over the past year, sources said the company's reputation has improved. A Georgia CIO said, "They are following through on commitments and are more willing to negotiate terms and pricing. They are showing more genuine interest in improving the customer environment and listening to customers. There is also more executive contact."

Although Cerner's focus, historically, has been in the acute setting, the company appears to be making some progress in the ambulatory setting. One CIO said he would like to do more with Cerner in the physician area – if the Stark regulations were relaxed that limit what hospitals can give outside physicians.

GE and Epic were described as providing the greatest competitive threat to Cerner. A CIO said, "Siemens doesn't have vision at this time, and McKesson is not fully integrated yet."

Cerner officials made these points about their company:

- A presence in 70% of clinical IT markets globally. An official said, "In the U.K., Cerner continues to meet all the milestones on England's Choose and Book project ...Our performance to date could create additional opportunities...Areas of opportunity include: France, Australia, Malaysia, Germany, Ireland, and the United Arab Emirates." Another official said he is relieved the company is not participating in the large National Health Service (NHS) contract in the U.K., "We had our best year ever in the U.K. We had some contracts awarded before the procurement that have gone very well. We like where we are at in the U.K...Outside the U.S., federal governments are all interested in the power of IT to help transform their healthcare systems. Efficiency is at the core, though all have slightly different agendas. Most European countries have something going on, and we are at most of those tables."

- >5,800 associates, including acquisition of VitalWorks Medical Division.
- >30% of market share gains were from new clients.

Cerner Millennium

Item	Current status
Live Millennium solutions	3,767
Clients	287
Facilities	749
Locations going live in 2004	378 (65 acute care, 313 physician office/clinic)

- Lighthouse is a major initiative. An official said, "If a small number of hospitals are on CPOE and a slightly larger number have EMRs, that is not enough power to change medicine. But in 10 years, if infrastructure investments are made, physicians will start to use the explosion of technology to treat patients differently. We call this initiative Lighthouse."
- 80% of hospital revenue in the U.S. is in 80 categories of procedures/conditions, and the top of these are: cardiology, GI, pulmonology, orthopedics, and OBGYN. Cerner plans to work with five or six academic centers to develop systems in these areas, and then take them out to other Cerner clients. For instance, Cerner has a project underway with the Mayo Clinic in Jacksonville FL in orthopedics designed to improve operating margins through use of IT to reduce mortality, complications due to DVTs, hospital re-admission rates, and length of stay.
- Bedrock is a broad company initiative intended to drive the cost of IT ownership down. It was compared to a "bundled cable TV model." An official said, "The target is to do a physician install in a weekend. We believe physicians are a key element, an essential part of the network we have to build – which is tied to our VitalWorks acquisition."
- Cerner has a number of pilots underway, including: CareGuard (a wireless solution), automated IV pumps, bar code medication administration off a cart with a bar code reader, hand-held bar code readers, and links to VitalSigns machines.

ECLIPSYS

Eclipsys' reputation is slightly better than it was last year, and customers described the company's implementation capability and service as good. A customer said, "We could have had more consultative help on how to use it (our new EMR). We expected more help and a more well-defined plan on how to use it. But Eclipsys has the only potential for a true medical management system. They are the only ones who even get it. The others are layered. With Eclipsys, CPOE, pharmacy, and charting are seamless. If the company delivers, it will get a lot of interest."

Eclipsys' Sunrise CPOE was described as good, but not great. However, the response time issues that plagued the product appear to have been resolved. A customer said, "Some of the things people have been waiting for are in the 4.0 version, but it is still not web-based, which is a negative for us. It also could be slicker and prettier."

Sources believe Eclipsys won't continue to exist as a standalone company in the long run, that it will be acquired by a larger HCIT company. A Florida CIO said, "I think it will be bought. The company has cleared the deck of baggage to be sold." A Midwest CIO said, "I would hate to see Eclipsys diluted. We like them, and we use them for our ICU. Their support is good."

EPIC

Epic's reputation has definitely improved, customers all agreed. A Texas user said, "Their reputation is untarnished. They are more 'real' for us."

The company also got high marks for its implementation capability and service. One customer said, "Epic gets very good marks from us." A third CIO said, "We are implementing Epic, and to date it has been good." A Midwest CIO said, "Epic is absolutely top drawer, not just a sales organization. The CEO (at Epic) has the message...We bought the company instead of the solution."

Epic's product offering is viewed as comparable in competitiveness to last year, but sources believe the company is clearly gaining market share, and they don't believe the company's push into the acute clinical market has negatively impacted their performance in the ambulatory clinical market, which appears to be hurting Cerner and perhaps Siemens and McKesson the most. A Texas CIO said, "It only makes them more efficient...They are hurting Cerner because of Cerner's inability to deliver, but they are also impacting McKesson and Siemens." An Illinois CIO said, "Since the market is growing, I'm not sure anyone has been hurt by Epic's growth." A West Coast CIO said, "Siemens and Cerner have been hurt in the larger markets."

The greatest competitive threat to Epic comes from Cerner, Siemens, and McKesson, in that order, sources said. A CIO commented, "It's a question of execution. They all have a fairly common vision, but deliverability is where Epic shines." A Midwest customer said, "Cerner is the key competitor on the hospital front, and smaller companies on the ambulatory front."

Epic got a big contract with Kaiser in California, and sources believe that is going well. One source said, "We went to a class with them (Kaiser officials), and they seemed fine." A West Coast CIO said, "I heard Epic embarked on a large-scale implementation and learned a lot from it – both good and bad – that now helps us. The company is learning from its

mistakes at Kaiser and is modifying its behavior." A Midwest CIO said, "I talk to the Kaiser folks regularly, and they are reasonably happy."

Sources all agreed that Epic will continue to be a standalone company and won't be acquired by a larger HCIT company. A CIO, who felt strongly that Epic would remain a standalone company, said, "Epic has a strong CEO, and the culture is so antithetical to a public company. Part of Epic's ability to perform is that it is not distracted by public reporting. And Epic is good at partnering." An Illinois CIO said, "There is no reason to suggest Epic can't maintain its current position. I think they will try to stay private."

GENERAL ELECTRIC

GE was described as "the company to watch" in terms of achieving interoperability. A consultant said, "GE has the capital, the resources, and the technology...It needs to gain informatics on the software side and show more than medical equipment." A competitor said: "If you look at today where GE has been successful, it is bundling into a big package, where you really don't know what you are paying. You can force unbundling today, and now you can't discount on one piece of a contract more than another."

GE's biggest weakness in HCIT was described as the company's philosophy that a single-vendor solution is the answer. A source said, "That's why GE seems to lack interest or willingness or the ability to connect to others. The company is very forward-thinking in its imaging area. That's Star Wars type of technology."

During HIMSS, GE Healthcare announced that it will be collaborating with Intermountain Health Care (IHC), a leading integrated healthcare system, to create a best-practices-based clinical software program to accelerate the adoption of EHRs in the U.S. GE officials said the software program will serve as a building block for a wide-reaching healthcare IT system, based on its Centricity software IT platform. GE also intends to provide Centricity technologies for pharmacy, CPOE, cardiology, and more, across IHC's network, which includes 92 clinics/physician offices and 21 hospitals in Utah and Idaho.

GE claimed this is a step toward interoperability. A GE official said, "What will be unique about our collaboration is that IHC physicians, nurses, and clinicians will provide clinical knowledge that GE's engineers will put in their company's IT format to use across the country. The design will actually be directed by those who work in the field and who will use this technology everyday." IHC Senior Vice President Greg Poulsen said, "Fewer than 15% of the healthcare providers in developed countries like the U.S., Canada, and Western Europe have adopted clinical IT systems. Because of such a low level of penetration, GE and IHC view this as an opportunity to set the standard for the industry to follow."

IDX Systems

IDX's reputation got mixed reviews from customers, with some saying it is slightly better this year than last and others saying it is slightly worse. A Midwest customer said, "IDX oversold some technology, for example data conversion for Carecast, but support has improved."

The company's implementation capability and service also got a range of reviews, with descriptions ranging from "a little iffy" to "pretty good" to "outstanding."

Reportedly, the NHS's clinical IT project in the U.K. is bleeding the companies that got the contracts. A source said, "The stories are a concern with the direction the U.K. project is going...What we are hearing is that the contract negotiations were at levels that virtually no one could afford, but it was, 'This is the price; take it or leave it.' We are hearing that the effects of those hardball negotiations are starting to become evident, and there is a challenge for companies to fulfill their requirements based on the level of funding. Everyone knew it would cost more than they bid, but they figured they would worry about that down the road, and now it is down the road. It will be interesting to see what happens. No one is talking on the record about this yet. The hope and expectation is that the U.K. initiative will be a major way to show this can work. Everyone wants this to work. So the hope is that people will find a solution. Then, if it works, it *can* transfer to the U.S. There is limited transferability, but it does demonstrate in a major western country that it can be done. But you can't just replicate it because we don't have a single payer system."

A U.K. source said there are big informational and structural questions with the U.K. project, "All the money is being spent, but quite a lot of the project is still in the pilot stage...There have been a lot of changes. If a patient has choices, you want good information, and we have some information, but maybe not the right information. My bet is that the project will happen, but it will take longer and require more money." He suggested pharmas should be kicking in some money to help pay for the project.

CIOs are worried that the U.K. cost overruns will take funding away from U.S. projects, and one CIO said he already has seen a drain of IDX expertise leaving the U.S. to help out in the U.K. However, IDX officials insist there has been no negative impact on U.S. R&D or support resources due to the U.K. project, and no source claimed to have dropped IDX from its short-list due to concerns related to the U.K. contract. A consultant insisted IDX's U.K. project is challenging the company's ability to service its current Carecast customers in the U.S. An Ohio customer said, "It has hurt some, drained some resources. We do see that. Some experts were diverted to that client."

Yet, other customers reported no negative impact from the U.K. project. A Midwest CIO said, "I haven't seen any negative impact on the company's U.S. business from the

U.K. project." An IDX customer said, "My first reaction was that it would hurt U.S. customers, but it hasn't turned out that way. It is pushing IDX faster into certain functionality than they might otherwise have."

IDX's Carecast was described as slightly less competitive than it was last year. The company claims to be gaining market share with Carecast, but an official confirmed that no new Carecast customers were added in 2004. A source said, "It is not very good. There are too many other good hospital systems out there, especially Eclipsys or GE." An IDX customer said, "Carecast market share is flat to down. I'm afraid that if IDX loses a lot of money in the U.K., and it doesn't increase market share here, they will not develop products as they should. But the company is doing deals like MercuryMD (a provider of mobile clinical technologies), which was really smart." Wake Forest University Baptist Medical Center in Winston-Salem NC, is an IDX customer that upgraded to Carecast in November 2004. CIO Paul LoRusso said he is very happy with IDX so far, "We wanted a single EMR for both ambulatory and inpatient. In 1997, no EMR existed, and we were impressed with MediaLogic and Famous, so we married those two because we felt they spoke to the heart of our needs. There were huge cultural differences when IDX bought Famous, but they worked out...IDX delivers on what it promises. It may not have all the bells and whistles, but they will be there and deliver as promised."

Several companies are seen as posing a serious competitive threat to IDX's Carecast, including Cerner, McKesson, and Siemens. The competitiveness of Flowcast (IDX's administrative/financial offering) is viewed as the same as it was last year, and is holding its own in terms of market share, with the key competitor Epic – but also Cerner, Eclipsys, and perhaps McKesson. An IDX Carecast customer said, "We don't use Flowcast. We still use Medipac (McKesson) because it is too rooted to change. There is no economic incentive for us to change." Another customer said, "The new head of Flowcast may be a big help."

IDX's Imagecast PACS offering appears to be a good product, but it has been sold primarily to IDX customers so far. The RIS/PACS solution also appears to be a growing competitor in the market. A CIO said, "Our radiologists want to convert to Imagecast, and we will present it to our budget committee. Our physicians use GE's Logician outside the hospital, which is older than Imagecast, but they won't change." An IDX customer said, "We are switching to the RIS/PACS."

An IDX official explained that the company has decided to focus on procedural medicine, saying the growth in the number of procedures is fueled by:

- Technology advancements.
- Device implantation on the rise (e.g., ICDs for CHF). The estimate is that 35% of all procedures will involve implantable devices by 2010, up from 20% in 2000.
- 70%-80% of all procedures use medical imaging.

- Current provider thinking: “Get the diagnostic imaging business, and the more lucrative interventional procedures are likely to follow.”

Her view of how to capitalize on procedural medicine:

- Detail the economics at the discreet procedures level, not at the overall service line level. And market the right procedures.
- Create new procedure lines by promoting emerging feeder business. Understanding the referral relationship is extremely important. How psychiatry can bring in neuro-surgery, how pulmonology can bring in thoracic surgery.
- Creating high performance cultures.
- Optimizing IT infrastructure and loyalty.
- Optimize business-to-business (B2B) information sharing.

IDX officials said the company is putting a lot of emphasis on cardiology because:

- Caths and echocardiography are growing.
- Cardiology professional fees are declining.
- There is an expected ~20% growth annually over the next five years in cardiac imaging.
- Cardiovascular information systems (CIS) have a huge disconnect. An official explained, “About 2,500 U.S. hospitals have CIS, but it is a very fragmented, poorly automated system – almost where radiology was five to 10 years ago...Electrophysiology doesn’t want to talk to cardiac cath, etc. It is not like radiology, where there is clearly one head of radiology. Cardiology is much more autonomous, but they recognize the need to change, and they recognize there is a need to increase expertise in IT, and they have made it a priority for the next decade...We will target non-IDX customers.”

The competitors IDX officials identified in the cardiology space were: HeartLab and Camtronics as standalone cardiac imaging vendors, then Philips and GE as EMR vendors who are trying to “build down” into cardiology. An official said, “Lumedics is probably the No. 1 penetrated vendor, but we talk to a lot of their customers who don’t want to upgrade with them.”

Cardiology comes with different challenges than radiology. An IDX official explained, “Cardiologists are very different from radiologists. Cardiologists are very highly paid; radiologists tend to be more about technology and the excitement about participating in a pilot. Cardiologists are harder to get interested in technology; they just want it to work and take 30 seconds to do a report. So the relationships are new ones to create. And I think the sale has to be at the CEO level. The hospital is really buying the solution. Hospitals won’t buy anything the cardiologists don’t want...You can sell to the CEO, and then they have to help you sell to the cardiologists. So you are selling to people who aren’t even on staff.” Another IDX official said, “If you are a hospital CEO,

the thing you worry about most is cardiologists taking their business elsewhere...We want to be able to provide an environment that makes a CEO feel comfortable, so the cardiologists will feel comfortable practicing there. Cardiologists really don’t want to go out and run facilities.” A third official said, “We have to deliver to the hospital and please cardiologists. As we build solutions, we haven’t talked to a CEO; we talk to cardiologists. Now, we have to convince the people with the paycheck that they need to buy it.”

McKesson

McKesson’s reputation definitely improved over the past year, but all the issues are not behind the company. A Georgia CIO said, “McKesson is definitely better than it was three years ago. It has vision now.” A consultant warned that McKesson is “stumbling.” A Midwest user said, “It’s variable. Our PACS install was wonderful, but other installs have not been so wonderful.”

The company did get good marks on its implementation capability and service. A consultant said, “McKesson is challenged by the abilities of its clients.” A CIO said, “I’d give them a 7 or 8 on a scale of 10, which is better than last year.” Another customer said, “I’d give them 10 out of 10. They are great. We never have any issues.”

McKesson’s product offering was described as slightly more competitive than last year, and sources believe the company is picking up market share. A CIO said, “They are absorbing their acquisitions and making the product a little more competitive.” Another customer said, “They are more competitive because they are more integrated now.” A third customer said, “McKesson is gaining share with its new product.”

Siemens

Siemens’ reputation is unchanged from a year ago, but its product was viewed as more competitive than in 2004, and its implementation capability and service got high marks. A Florida CIO said, “Siemens is an evolving company. It is too early to tell if it is better or worse.” A Pennsylvania CIO said, “The competitiveness depends on the product. Siemens is always excellent with legacy products, but it is struggling with the Sorian implementations. The problem is the framework is excellent, but there is no content.” Another CIO said, “Siemens is more competitive because of Sorian. At least now, it has a beta product, but it is still struggling.”

Sources believe Siemens is holding market share, not gaining or losing share. A CIO said, “Siemens is retaining old clients because of its legacy systems, but it is not winning new business.”

OTHER PRODUCTS AND VENDORS

Radio Frequency Identification (RFID)

There is growing interest in RFID technology, and several CIOs said they were shopping for RFID. Among the companies they were considering: PanGo Networks and Radiance Medical Systems.

ALLSCRIPTS

A Massachusetts CIO described Allscripts as focused on EHRs and “one of the best.” An Allscripts official said, “Groups of 20+ doctors are our sweet spot. IDX users are 75%-80% of our base...Our advantage is that we are browser-based for easy connectivity, and we are an innovative company, with a standardized database and IHE incorporated...We’ve also been acclaimed as No. 1 EMR at TEPR (Towards an Electronic Patient Record) in 2004, No. 1 physician IT solution at TETHIC (The Emerging Technologies & Healthcare Innovations Congress) in 2003, and the highest KLAS rank for EMRs.”

Allscripts’ reputation has improved over the past year, but their offering is considered comparable in competitiveness to what it had last year. A Missouri CIO said, “Allscripts is better because it has a product that is continually changing to meet the needs of physicians, and they are committed to providing the support...Allscripts is web-based, and that alone makes it superior to a client-server-based system.”

Allscripts’ implementation capability and service was described as good. A CIO said, “They are very detailed, very smooth, with highly intelligent people who work within the process. We use Allscripts’ EMR, and we would do it again. I would recommend Allscripts to a non-IDX shop.”

Overall, sources believe Allscripts is gaining market share – significantly. The greatest competitive threat to Allscripts for mid-size physician groups was described as A4, GE, and Siemens/NextGen.

MEDITECH

Several CIOs said they are using MediTech, and all claimed to be happy with the company. One source said, “GE, Siemens, and McKesson don’t even have all their applications integrated – but MediTech does.”

STENTOR

Stentor has an excellent reputation, and this is unchanged from last year. A CIO said, “Stentor has an excellent system.” A Midwest CIO said, “They have a very good reputation. They were on our short list, but we chose McKesson because its integration was better.” A Texas CIO said, “It’s a good company, and it has name recognition.” An Arkansas CIO

said, “Stentor did not have the integration we wanted. They are stronger in image distribution, and we wanted image acquisition, storage, and integration.”

Sources described Stentor’s implementation capability and service as “very competitive,” and they said it is more competitive than it was a year ago. A CIO said, “Time will tell if it is competitive against GE, Agfa, and Fuji.” A consultant said, “Stentor is much more competitive than last year because it is more flexible, the learning curve is small for the end-user, and it is very intuitive.”

However, the company appears to have some problems with managing expectations of its customers. A consultant said, “We are helping with a Stentor implementation, and it is six months behind. That wasn’t Stentor’s fault. The radiologists’ expectations were different; they didn’t consider transcription and workflow. Stentor is a *platform*, not a PACS company; it is a repository for pictures and other information. Stentor is superb, but it needs to learn to manage customer expectations better and make it clearer what they do and don’t do...I would choose Stentor over IDX because Stentor has better customer service.” Another CIO said he had a bad experience with Stentor, “We piloted Stentor and had a heck of a time. I hope it has improved but I’m not sure. The system didn’t work, there was late delivery, and the response was slow. I think this has gotten better.” A Midwest CIO said, “We looked at Stentor and Fujitsu because we knew support would be difficult. They have no presence in our area.”

Stentor and IDX have a cross-licensing agreement under which Stentor is not permitted to market to IDX customers. Thus, IDX and Stentor are competitors outside of the IDX customer base. Will Stentor be successful winning business outside of its IDX partnership? A CIO said, “They already are. A number of McKesson shops have purchased Stentor.” A consultant said, “They are definitely winning business outside of the IDX partnership. They are proving that daily. For example, they got a government contract with the GSA.” An IDX official said, “Stentor is not licensed to sell into our customer base. Non-IDX customers can choose either the IDX PACS or Stentor, but we have a more complete cardiac PACS. Stentor can store cardiology images, but it can’t do the diagnostic interpretation.”

The greatest competitive threat to Stentor is probably Siemens, GE, and Agfa, not necessarily IDX. A consultant said, “I don’t see much head-to-head competition with IDX.” A Georgia CIO said, “The real question with Stentor is whether they can be successful enough to keep the partnership with IDX or whether IDX cuts the cord.”

NAMES OUT OF THE MAINSTREAM

SANDISK has developed an interesting device for storing Electronic Health Records (EHRs). It is a waterproof, rugged, and wearable storage device. SanDisk, the world's largest supplier of flash memory cards, debuted the product at this year's HIMSS conference.

ZIX. This company was described by a source as a leader in e-prescribing with its PocketScripts.

ZYNX HEALTH. A CIO said this content provider has been signing up a lot of customers, "McKesson is incorporating it, and possibly Siemens is."

Other names that sources recommended watching included:

- **PICTURETEL.**
- **GREENWAY SYSTEMS.** A physician said his hospital wants his group to get Epic, but the doctors distrust the hospital, so they are considering Greenway instead. A competitor said, "Greenway goes for the lower end of the market, typical 1-20 physician groups."

