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Membership
Services Office:
1550 Utica Avenue South
Suite 550
Minneapolis, MN 55416
T. 952.545.5880
F. 952.545.6116
E. scottsdale@fcg.com
W. scottsdaleinstitute.org

Measuring the Impact of IT

EXECUTIVE SUMMARY

Measuring the value of IT is simple, says veteran CIO Carvel Whiting of Intermountain HealthCare: Just take away the computers. The resulting hue and cry from clinicians and operations people alike will render no doubt as to the value of IT. But if absence of IT makes the heart grow fonder, why the decades old hand-wringing when it comes to determining IT's value? And, if it has been an issue for so long in the industry, why is it still a matter of debate?

It was clear in last month's issue of Information Edge, which looked at CEO initiatives for 2004, that IT is a key enabler of clinical and operational strategies. Meeting the demands of patient safety and quality in the context of efficiency cannot be achieved without IT. That's a given. But how do you know if it's working? How do you know if the IT investment you're making is paying off?

We posed those questions this month to three CIOs, a CMO and a veteran healthcare IT consultant. While determining the impact of IT on clinical and operational performance is likely to remain a perennial issue, these executives have developed or are in the process of developing frameworks for measuring IT's value in supporting the business of care. That value may be a moving target in the view of Whiting, but CIOs especially must home in on that target wherever it may be moving in their organizations. In that sense, measuring the value of IT is also measuring the man or woman responsible for it.

Vermont value

Blake Jensen, CIO at Fletcher Allen Healthcare in Burlington, Vt., says the organization has a number of measurements covering both customer satisfaction and project ROI. The first task is to ensure that those measures reflect organizational strategies, aligning IT strategy to current business drivers.

Fletcher Allen's metrics range from the very broad to the specific.

Senior executives—CNO, CMO and CFO—submit report cards to the board of directors on clinical indicators such as the number of adverse drug events (ADEs), length of stay, AR days and cash on hand. IT is related only initially. "Our officers' reports are not IT-specific, but IT-dependent. If our clinical outcomes are not what we expect, IT becomes part of the solution," says Jensen.

That's particularly obvious with an issue like LOS. Efforts to reduce LOS is at its core a business issue requiring IT support because it involves improved discharge

planning through automation. "Our new bed-tracking system allows case managers to be a part of the process even before the patient is admitted. Nurses working on pre-registration have access to an electronic bed board with all the beds in the main facilities," he says. The case management system is linked to that bed tracker.

Measuring outcomes

For specific projects, the organization is gathering satisfaction data based on benchmarks stipulated in a "project charter" that defines outcome–specific parameters.

Customer satisfaction with the help desk is evaluated, as well as provider access and response time. The latter is achieved via Fletcher Allen's Provider Access Services (PAS) group, a sophisticated telecommunications team that facilitates real-time communication among physicians, for example, primary care physicians trying to get in touch with specialists. "We've had people from all over the country look at it," says Jensen.

PAS covers a wide range of clinician-to-clinician communication. The group knows who's on call and what clinicians are coming into the ER. Should a nurse require counsel on a problem with a patient, PAS identifies the patient's physician and connects the nurse with that doctor via telephone. PAS maintains a large database with all the pager numbers, logic and parameters. The phone system is linked up to the computer system and the system maintains logs to track performance.

For specific projects, Fletcher Allen conducts a total-cost-of-ownership analysis involving senior leadership review and assigning of an executive as project owner. "We are beginning to identify outcome expectations of the project," says Jensen.

IT mythology

"You get broad benchmarks, using the national data on factors like ADEs and reduced length of stay for an estimated ROI," Jensen says. Total cost of ownership calculates the cost from the inception of the project on through its life cycle—a five-year period—measuring not only hardware, software and implementation, but end-user costs such as involvement in the design process, identification of super-users, training and costs to maintain the system.

"It's critical to include the end-user side of the equation. Historically it involved just the vendor costs," says Jensen, who estimates that the true cost of a system typically more than doubles when you add end-user costs. "And, if you don't identify end-user resources, you can't do a redesign of workflows."

For example, a departmental system cost about $800,000, including hardware and software. However, when the cost of IT and end-user resources were added, another $800,000 was added to the cost, including a whopping $600,000 for training.

Jensen estimates for an EMR, the vendor cost is more like a quarter of the total cost of ownership.

The Holy Grail

That measuring the impact of IT on business operations is a perennial challenge is clear from the comments of seasoned CIOs.

"Although we use a wide range of metrics in both IT and the business areas, I'm not comfortable where we are" in terms of measuring IT's impact, acknowledges Carvel Whiting. "Measuring the effectiveness of IT

WELCOME NEW MEMBER

The Scottsdale Institute is proud to welcome new member Texas Health Resources, based in Arlington, TX, but serving 29 counties of North Texas, including the Dallas-Fort Worth Metroplex

Texas Health Resources (THR) is one of the largest faith-based, nonprofit health care delivery systems in the United States, serving more than one in five consumers in North Texas. THR was formed in 1997 through the merger of Fort Worth-based Harris Methodist Health System and Dallas-based Presbyterian Healthcare Resources. Later that year, Arlington Memorial Hospital joined the system, which now has more than 13 acute-care hospitals with 2,600 licensed beds, 3,200 physicians, and almost 17,000 employees.

THR has announced $1.5 billion in building and expansion programs on present campuses and into new markets in the next ten years.

Welcome Doug Hawthorne, President and CEO: Steve Mason, Senior Executive Vice President and COO; Ron Bourland, Executive Vice President and Chief Financial Officer; Dave Ashworth, Executive Vice President of Strategy and Business Development; and Dave Muntz, Senior Vice President and Chief Information Officer.

IHC INTERMOUNTAIN HEALTH CARE

Carvel Whiting, CIO, Intermountain HealthCare, Salt Lake City

is the Holy Grail of this business.

"I'm not sure there is a single right answer. I've seen this thing done a hundred different ways. In my experience the most important measures are not quantitative. Not that I don't believe in quantitative measures—because I really do. We have extensive measures. But the ultimate measures of IT value are the perceptions of top management. And very often those are soft, anecdotal and subject to change," he says.

Take healthcare claims processing as a case in point: You can drive the cost per transaction down and down to increase IT value. However, if there is a shift in the marketplace this may no longer be sufficient. "All of a sudden you could get into a competitive situation that shifts the emphasis from lowest cost to how can we get this product out faster," says Whiting. "Now the cycle swings to product innovation. Then when that goes away, it shifts to another focus. There isn't a list that's perfect."

The moving target

He notes that a CIO might feasibly develop a checklist of things to measure on the effectiveness of IT, perform well against that list and then get fired the following year because the strategic focus changes as a result of changes in executive leadership or the marketplace.

The same phenomenon can occur in marketing or just about any other department. "You have built a certain organization with certain skills and now you have to retool. Your organization may be a minor player in the market and suddenly becomes a major player. The dynamics change. I don't care if your WAN and desktop costs are the lowest in the city. It's not important anymore. Now something else is the driver.

"I've seen people struggle with these issues over the years. Many CIOs and IT people continue to ask: How do I demonstrate that IT is valuable? I've heard it ever since I started in this business.

Almost everybody at IHC works really hard. Are they worried about the cost of IT? Absolutely. Do they complain about it? Yes. Do they want more IT? Yes!"

How many ways

So, in addition to measuring what IT is doing so you can manage it, there are many ways to measure the effectiveness of IT. For example, for the last ten years IHC has been developing clinical protocols for areas such as cardiovascular and newborn care. The protocols are supported by IT process and analysis. Physicians and researchers can review data for each of those specialties in their own data marts which are part of a larger enterprise data warehouse.

Among other things, some of these clinical protocols stipulate that certain drugs be given to patients after surgery. Later, when the clinical outcomes data is scrutinized—risk-adjusted and outcomes are measured—what it shows for cardiovascular surgery is that IHC's three major facilities have lower mortality rates than every other provider in the state. Is that measuring the effect of IT? It's a combination of technology, people and processes, says Whiting. Each one of those factors must be present and of high enough quality for a clinical protocol or any other

WELCOME NEW PROGRAM PARTNER

The Scottsdale Institute is pleased to announce HIMSS as a Program Partner.

HIMSS (Healthcare Information and Management Systems Society) is the healthcare industry's membership organization exclusively focused on providing leadership for the optimal use of healthcare information technology and management systems for the betterment of human health. Founded in 1961 with offices in Chicago, Washington D.C., and other locations across the country, HIMSS represents more than 14,000 individual members and some 220 member corporations that employ more than 1 million people. HIMSS frames and leads healthcare public policy and industry practices through its advocacy, educational and professional development initiatives designed to promote information and management systems' contributions to ensuring quality patient care.

Welcome Steve Lieber, President and CEO, and the entire management team at HIMSS.

quality initiative to succeed. But it's very difficult to separate out any one of the three and determine how effective it is in making an initiative work.

Key questions to ask, says Whiting, are:
1. Who is the audience?
2. Why am I measuring?
3. Why do they care?

A subjective and soft measure

"The problem has been talked about for the last 30 years. If it was clear and easy to do, people would have solved it and a book would have been written to document it. It hasn't, however, and that's because it's soft and always moving," he says.

To illustrate just how subjective measuring the value of IT can be, Whiting cites the example of a CIO who was so successful at a company that he was recruited for the same position in another organization. Two years later he was fired, not because his skills had diminished, but because the new employer's expectations were so different.

He also notes that in a recent 6-month period, 22 healthcare CIOs were fired. "Why? Because the measures of success have changed. Factors like HIPAA, and the IOM report are changing the market, and CIOs have to respond."

Value points in Virginia

Bert Reese, VP and CIO at Norfolk, Va.-based Sentara Healthcare, agrees, acknowledging that he used Carvel Whiting's model as the basis for his own. "Carvel's model is based on an always-changing focus," which is a wise strategy, he says. Using that same model, Reese developed one that expresses the value of IT based on three value points:

- Financial return
- Clinical return
- General process improvement

Bert Reese, VP and CIO, Sentara Healthcare, Norfolk, VA

"If you express the value of IT based on our three value points, you'll always be in synch with the customer. The reason is that the funding of projects you want to do comes from them, your customers," he says. Whether it's a new wing of a hospital, new MRI or a new IT project, if the value proposition gets out of synch with customer expectations, "you get into a death spiral."

Any technology acquisition or upgrade costing more than $300,000 must demonstrate this three-pronged ROI. "We like to get projects with all three attributes, so if a department wants to sell a project to senior management, they need all three," says Reese.

He says that when his job performance as CIO comes up for review, he is never judged on achieving goals of being on time and under budget, factors which are considered the minimum standard. "My goal is deliver on my value points," which in 2003 amounted to $23 million in combined increased revenue and decreased cost, Reese says. Once such a goal is established, it is parceled out as targets for executives who report to him.

Distributing the goal

First, it's necessary to identify the value. Second, it's necessary to make executives financially responsible for pieces of the goal. That might come in the form of improved turnaround time for radiology reports, increased throughput in the ED and higher customer satisfaction scores, for example.

WELCOME NEW MEMBER

The Scottsdale Institute is proud to welcome new member Provena Health in Mokena, Ill.

Provena Health is a Catholic health system officially formed December 1, 1997, by uniting the health-related services of three Roman Catholic religious congregations (Franciscan Sisters of the Sacred Heart, Servants of the Holy Heart of Mary and Sisters of Mercy of the Americas). There are over 10,000 employees and more than 1,700 physicians on staff. Provena Health's integrated system includes: 6 owned acute care hospitals with 1,723 staffed beds and 1,923 licensed beds, 14 owned and 4 managed long-term care and residential centers with 1,724 beds, 28 primary care, specialty and diagnostic clinics and 5 home health agencies.

Welcome William Foley, President and CEO, Margaret Gavigan, System Vice President and Chief Clinical Officer and the entire Provena Health team.

"I go out to my customers—administrators of a hospital, for example—and distribute the goal. So, when the president sits down with me we aggregate the results and have a good value story around IT. I'm ultimately responsible for measuring the value of technology."

What's significant, he asserts, is the view that the value is in supporting the customer. "You have to put the value of IT in the currency—process improvement, clinical quality improvement—that executive leadership recognizes. If I went back to my customers and said I have 100 terabytes of storage or that my network is up 95% of the time, they'd look at me like I'm from Mars. The value proposition must be in terms they understand," says Reese.

Creating the perfect storm

A case in point is Sentara's investment in a picture archiving and communication system (PACS) and associated radiology information system (RIS) and dictation system. The value points break down in the following manner:

1. Clinical return: Better information more quickly to physicians.
2. Financial return: New revenue from more patients by getting reports out quicker and providing remote access to images.
3. General process improvement: Improved turnaround time from days to hours.

"When you account for all three value points it's a perfect storm," says Reese, adding that his leverage in getting executives to achieve pieces of the value target is they know if they want a new technology in the future they have to work with him to measure the value. "They always say yes, because they know we're all in it together."

Key to extracting that collaboration are executive skills. "You're not just a utility. You have to be at the table of corporate leadership," says Reese. Benchmarking IT costs and infrastructure with other organizations is also critical. "You need to constantly attack your own IT costs because it's often difficult for your peers to understand them."

A CMO's perspective

Brian J. Anderson, MD, CMO at Allina Hospitals and Clinics in Minneapolis-St. Paul, says that Allina is undertaking a $180-million, system-wide information initiative to redesign and integrate both clinical and revenue-cycle processes. "We wanted to measure clinical, safety, satisfaction and financial benefits for both strategic and operational reasons. We created a benefits team within the project office to do a three-level analysis:"

Brian Jon Anderson, MD, CMO, Allina Health System, Minneapolis

1. Early on, high-level estimates such as how the EMR could help reduce inappropriate clinical variability, reduce the cost of medical errors and improve revenue-cycle processes. These estimates were useful in strategy and proforma development.
2. Refined data collection with more attention to detail. "This step was used to validate our first strategic estimates," says Anderson, and was helpful in developing project and operating unit budgets and setting targets.
3. Detailed measurements at each site closer to its go-live date that provided

Upcoming Events

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March 1, "IOM Findings: Implications for Nursing" Carol Ann Cavouras and ChrysMarie Suby, Labor Management Institute, discuss "Keeping Patients Safe: Transforming the Work Environment of Nurses" the report released in November 2003 by the Institute Of Medicine.

They present the sources of threats to patient safety and highlight the eight evidence-based recommendations as they pertain to the nurses' work environment and their essential role in keeping patients safe. (Nursing Management Interest Group)

March 3, "Partners Signature Initiatives" Dr. Thomas Lee, MD Medical Director, Partners HealthCare Physician Network, Partners HealthCare, Boston, MA, will present Partners' major objectives for funding the infrastructure that will increase overall system value. He will cover the strategic imperative, and review the five resulting funded initiatives: information system infrastructure, patient safety, quality metrics, disease management, and trend management. (IT Management Interest Group)

March 4, "Ambulatory ADE's: Research Data and Opportunities for Prevention" Dr. Tejal K. Gandhi, M.D. M.P.H., Director of Patient Safety-Brigham and Women's

more events on next page

much more specific, granular assessments.

The Benefits Team was quickly renamed the Performance Improvement Team because language and perceptions are powerful, says Anderson. "For many people, 'benefits' means the money, when in fact the emphasis is on improving quality."

Measuring evolves

"We're building as we go. The vendor's EMR is such that it evolves as it acquires more and more knowledge. We wanted to have the flexibility to adjust as time went on," he says.

Allina's teams tried to map every benefit they could think of and there had to be a very direct link to organizational strategy. Leveraging existing resources is very important. Some of the measurement capability is built into the system: Measures are designed to leverage existing systems to be as efficient as possible, and minimize the data measurement burden.

"We constructed a fairly skinnied-down set of measures," says Anderson. The team developed a balanced scorecard approach, with high-level clinical, safety, satisfaction and financial metrics, supported by more detailed process and outcome measures. Whenever possible, baseline measures are established, and results will be time-trended.

The organization is fully committed to the effort, which involves about 200 FTEs in 17 to 20 design teams over a 44-month period starting in midsummer. "We very purposefully made it clear this is a delivery system project, not an IT project." Anderson became the executive sponsor; a corporate VP became full-time project leader.

Anderson reflects on the issue of IT measurement: "There are a couple of schools of thought: 1) that you really must measure IT ROI, and 2) that it's the cost of doing business and we'll measure organizational performance. We come down in the middle of that. We have to demonstrate to the board that performance is continually improving, and that this investment was sound. We cannot afford to make this level of commitment and then take the system out. But my view is that what we focus on is measuring patient outcomes and the financials will come. We'll be learning as we go because we will be sequencing our hospitals and clinics. My hunch is we'll get better and better at each site."

Not new but still not very mature

The healthcare industry is still embryonic in its ability to measure IT's impact on operations and quality, says Erica Drazen, VP at First Consulting Group's Emerging Practices unit in Boston. "I don't think trying to measure IT value is new, we've been talking about it for years—and we're still saying IT will have to prove its value. CIOs will get replaced if they can't demonstrate it," she says.

Erica Drazen, VP, First Consulting Group, Boston

Drazen believes that the era when healthcare CIOs invest, say, $10 million in an IT initiative without some kind of ROI is past. "Not how they're going to estimate the benefits beforehand," she says, "but how they're going to measure as they go forward."

Upcoming Events continued

Hospital, Partners HealthCare System, Inc., Boston MA, reviews her NEJM published research study. She will describe the study data on 661 patients demonstrating the occurrence of ADEs and the severity, preventability and causes. Dr. Gandhi will also discuss other significant ambulatory patient safety issues such as medication reconciliation and follow-up of abnormal test results. (Patient Safety Interest Group)

March 8, "Customer Service: Award Winning Healthcare in the Age of the Mature Consumer" George Miller, CEO, Provena St. Mary's Hospital, Kankakee, IL, describes the changing demographics in America, and how healthcare organizations can design customer service to meet new consumer needs and gain competitive advantage. He reviews the exciting results achieved in customer service improvements, and the role of technologies in their strategy. (Consumer Driven Care Interest Group)

March 10, "Six Sigma Revenue Cycle Results at CHRISTUS Health" Gary Prala, Team Leader at CHRISTUS Health, Dallas, TX, will describe their approach to "Service Sigma": a common, portable approach that is sustainable by people and technology. He will review results from the 12 hospitals using the redesigned process, including one teaching, one suburban and one rural facility, all with significant bottom line results. (Six Sigma Interest Group)

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And the ROI must be in terms of clinical excellence or operational excellence—are we achieving best clinical practices, spending less time documenting and coding, providing more access to appointments?

Drazen and Scottsdale Institute will explore the potential for a collaborative effort of Scottsdale Institute members to collect performance information that SI members can use to measure the impact of IT.

The first step in such a collaborative would be to agree on a common set of metrics that:

1. Have a *clear benefit* to cost, clinical quality or service;
2. Are *feasible* in that the data is already collected or easy to collect;
3. Are *logical and relevant* to an IT implementation (not food in the cafeteria, for example);
4. Are *interpretable*, not likely to be confounded by changes in reimbursement.

For starters

From this foundation, the collaborators will select a "starter set" of measures covering clinical inpatient and ambulatory and financial operational excellence, as well as satisfaction. *Interested SI members should register today on the SI website for the initial March 18 discussion.*

Despite the fact that CIOs may ultimately be held accountable for IT's performance, Drazen asserts that someone in operations from outside IT should be in charge of measuring the impact of IT. "This is not an internal audit function for IT," she says. Whoever is in charge of organizational performance should assign responsibility for specific operations areas of measurement. "The key thing is that there's an owner and someone who's an operational person who can effect results."

Measuring the wrong things is costly

"We also think people get off on the wrong foot because they look at the wrong things. It can cost as much to measure the impact of systems as it did to implement them. Yes, there will be savings in paper forms, for example, but will that be enough to compared to something like formulary management? That's why it's important to benchmark with best practices. It's important to have comparative data. You might be very close to what's reasonable to achieve," says Drazen.

Organizations should establish reasonable expectations and stretch goals. The starter set is to help people make good choices and set realistic expectations. "For all these reasons we'd like to see a common core set of measures. The only place this is well done is in the revenue cycle, because people already keep track of the numbers in a standardized way. So there's a clear idea of what the best measures are," she says.

Standardization is critical. The SI collaborative intends to focus on standards from JCAHO, CMS and the AMA. It's likely that CMS- based measures will become mandatory.

Conclusion

The healthcare industry has been trying to measure the value of IT for decades, but in many ways it seems like we've just begun. Despite the often murkiness of the process, however, frameworks for determining the ROI of IT are emerging, arising from the operations and clinical side. Just as there are no longer "IT projects," but strategic projects

Upcoming Events continued

March 18, "Performance Metrics: Measuring Impact on Operations" Tom Wegert and Erica Drazen, Vice Presidents, First Consulting Group, review operational performance metrics and the use of these metrics in various FCG client organizations. We want to determine how many SI members would be interested in creating/collecting a common core set of metrics for the purpose of benchmarking and sharing best practices via an ongoing series of calls. (IT Value Interest Group)

March 19, "Status of CPOE in Community Hospitals" Dr. David Classen, Vice President, FCG, Associate Professor at University of Utah, and advisor to the IOM, Leapfrog Group and JCAHO, reviews his research and his personal observations on the status of this initiative in non-academic, research settings. (CPOE Interest Group)

March 25, "Patient Focused Smart Card Results" Dan Dietrich, MD, a family practice physician at Elmwood Family Care Clinic, Alegent Health, Omaha, NE; and Henry Zach, President, Health Data Card (HDC), discuss the results of a clinical study of 500+ patients using smart cards holding comprehensive healthcare data (demographics, insurance, immunizations, allergies, medications and next of kin). Data is secure, updateable by physicians, patient-controlled, and readable by providers at no cost. (Consumer Driven Care Interest Group)

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with IT as an enabler, there are also no longer measurements of IT's effectiveness from inside IT. For CIOs who have struggled to demonstrate the ROI of what they do, that's both liberating and risky. It puts the onus of measurement on the operations side but it also means that CIOs and clinical and operational leaders must have the intellectual breadth and leadership skills to play in the larger field.

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