Cover Story
The Price Of Doing Things Right
Baylor Health Care System Takes Its Time To Build Info Tech Architecture That Supports
Long-Term Success
By Philip Dunn

In 1998, Baylor Health Care System, Dallas, had negotiated a comprehensive clinical
information systems contract with a major health care IS vendor. It would be huge; the
system would buy and rely on a full suite of the vendor's information technology products.
Baylor would do things nobody else was doing, would establish itself firmly on IT's leading
edge. The contract lacked only the signature of Joel T. Allison, BHCS' president and CEO,
when something unexpected happened.

Baylor walked away from the deal.

Cold feet? Pre-close buyer's remorse? There were a few distractions, chief among them the
financial constraints caused by the Balanced Budget Act of 1997, and some system merger
negotiations that went nowhere. But ultimately, Baylor's IT leaders--Robert J. Pickton,
senior vice president and chief information officer, and Pete Dysert, M.D., the chief medical
information officer--decided they lacked confidence in the technology. The leading edge, it
turned out, resembled the "bleeding edge" a little too closely for comfort. Time has given
their skepticism credence, as the gap between what health care IT vendors promise and
what they deliver remains wide. "Some of those early adopters did not get the returns they
had anticipated," Allison says. "The right decision was made."

Instead, Baylor has built a strong IT foundation around decentralized network architecture,
following the slow-and-steady approach to make sure it squeezes the most out of its
diverse legacy systems. In building the infrastructure for tomorrow while connecting 15,000
employees, 3,300 affiliated physicians, patients, suppliers and even board members across
its sprawling network today, Baylor has established itself as an IT leader, and a four-time
winner of Hospitals & Health Networks' Most Wired Survey.

Dysert says tearing up the clinical integration contract was, in retrospect, a smart move.
"We were good stewards of our organization's resources by waiting," he says. For Pickton,
it's simply a matter of saving 97 cents--the amount on every dollar he estimates is spent
fixing problems stemming from badly planned information technology projects. "There's a
cost to being early. It costs 3 cents to do something right the first time, versus $1 to do it
wrong, go back and do all the retrofitting to make it work," Pickton says. "I just don't have
that kind of money to waste."

From The Ground Up

Baylor is a long way in resources, if not mission, from its 1903 founding as Texas Baptist
Memorial Sanitarium in a renovated 14-room house. The hospital was renamed in 1921 to
reflect its relationship with Baylor University in Waco, Texas, although today it maintains
only a loose affiliation with the university. In 100 years, Baylor Health has grown into one of

the nation's elite systems, comprising 14 hospitals, 47 clinics and numerous ancillary services across North Texas.

Likewise, the system's IT department has come a long way in recent years. Baylor has long been a pioneer on the medical technology side. In 1937, a Baylor hematologist invented a machine to dry blood plasma for storage without refrigeration, which was credited with saving thousands of lives during World War II, and in 1988 physicians at Baylor University Medical Center performed the world's first bridge-to-heart transplant using the Abiomed assist device. But as recently as eight years ago, its IT department was a relative backwater. Systems couldn't talk to each other, data closets were a mess of tangled wires, the CIO position wasn't executive level. Telephone switching equipment was stored in the basement, the worst place possible; a May 1995 flood nearly submerged the entire system.

So Baylor reorganized the IT department top to bottom. In what was then an unusual move, BHCS moved IT away from the realm of the chief financial officer; Baylor would treat IT as a strategic enterprise, not as a cost center. It brought in Pickton, previously CIO at EHS Health Care, Oak Brook, Ill. (which merged with Lutheran General Health System to create Advocate Health Care), and created Dysert's CMIO job. Both positions report directly to Allison.

Dysert's role was unique, and even today it is rare--although no longer unheard-of--to have a physician executive supervise IT projects. Dysert, who is also chief of pathology at Baylor University Medical Center, has dabbled in technology for years, and in fact started a company to computerize lab operations in the early 1990s. (That company was eventually bought by Cerner Corp.) As CMIO, he is expected to help craft the department's strategic direction for investments to meet Baylor's clinical needs. "Lots of money has been spent on technology solutions that are only now beginning to show any value, and that's largely because we haven't had a physician in charge," he says. "If you don't understand the process clinically, it's difficult to be successful."

For his part, Pickton quickly set about redesigning the IT network while keeping it open. He likens the challenge to highway reconstruction projects so common to the sprawling Dallas-Fort Worth region, where the work of clearing corridors for tomorrow cannot impede on traffic flow today. Baylor, too, was huge and spread out. Its hospitals operated independently of each other, using disparate clinical information systems--including packages from Eclipsys, HBOC, SMS, Cerner and Meditech; all told, Baylor's facilities use 70 products from 35 software vendors. Allison calls it a constant struggle with fragmentation within the system.

To lay the information highway of the future while allowing current traffic to flow, Baylor rebuilt its underlying architecture, relying almost exclusively on a digital network from Cisco Systems. This allowed each hospital to continue to use its own legacy system while linking information among them. "We've really grown around our network capability," Pickton says. The result: an architecture that allows images, data, video and voice to be sent seemingly seamlessly, even as each unit relies on its old platforms. Wireless devices can be added easily on the 802.11b standard, as the system migrates to 802.11g. Off-site data storage and redundant processes render downtime virtually nonexistent.

The network puts Baylor in good shape for new IT projects. "We couldn't do without it," Dysert says. "We developed a plan to build the infrastructure with incremental investments, so when the new applications arrived on the scene we as an organization would be ready to employ them." In the meantime, Baylor sought to connect its key constituents to each other, and to get physicians comfortable with new, Internet-based technology. The solution: portals.

The Immortal Portal

For any large system, connecting with diverse stakeholders is a major challenge. Baylor's solution is to "portalize" everybody--to build personalized, role-centric Internet points of entry. Doctors can track patient information and order tests and medications through the physician portal; trustees can read minutes and reports and prepare for meetings through the board portal; employees can check the cafeteria menu, schedule shifts and even track the performance of their favorite stocks and sports teams through the employee portal unveiled this summer.

Early on, Baylor figured out that what distinguished a portal from a standard intranet was the ability to customize it. "You can't get everybody to agree on one look. With a portal, the end user dictates the look and content," says Mark E. Johnson, BHCS' vice president for information technology. The portals are based around the My Yahoo model, with which many users are already comfortable from home use. To develop this, Baylor only had to look around the corner. Yahoo's personalization engine uses technology by Dallas-based Broadcast.com, the brainchild of Mark Cuban--now better known as owner of the Dallas Mavericks basketball team.

It is the 5-year-old physician portal of which Baylor is most proud. The portal puts discharge summaries, significant lab and radiology reports, and medication histories--crucial patient information that doesn't do any good sitting in a paper chart held in storage--at the physicians' fingertips. "As far as I'm concerned, it's a huge patient safety issue," says Irving Prengler, M.D., a hospital-based internist.

It gets heavy use because it's relevant. This was key because Baylor, like many urban hospitals, is not in a position to force its physicians' hands. It employs 312 physicians and 27 hospitalists through HealthTexas Provider Network, but affiliates with 3,300 physicians in a highly competitive market. But it was a challenge to make the physician portal both easy and valuable. "We have to have enough content, to make it rich enough, to make it a normal part of their day," Johnson says. "It's not something you can force on them."

One tip: involve physicians early and often in the development and maintenance processes. "You really have to be close to your users to make it effective," Johnson says. Of Baylor's affiliated physicians, half are signed up and trained to use it, and the system logs approximately 300 unique visitors a day. Prengler is a portal fan, even if he's unfamiliar with the details of how it works. "I'm technology challenged. I use it, but somebody else makes it user friendly for me," he says.

Tech's Clinical Advantage

There's another advantage to the portal approach: it makes physicians comfortable with IT and persuades skeptics of its clinical applications--especially where it comes to quality. A commitment to health care quality sits at the core of Baylor's mission and vision, and information technology is expected to support that. "If you look at these things strategically, technology to me is a nonstarter unless it deals with quality and patient safety," Allison says. To that end, IT has been central to Baylor's Institute for Quality, which the system established in 1999 to reduce medical errors and promulgate care paths through evidence-based medicine standards.

Through the institute, physicians view their own performance results in dozens of clinical categories, almost in real time. Data on core measures are constantly collected and analyzed. "Doctors don't want old information. I want to know how I did last week or yesterday," says Baylor University Medical Center hospitalist Roger Khetan, M.D. Each hospital within the system undertakes its own quality initiatives, and up-to-date data tell physicians how they're doing compared with the system-approved care paths. For example, when a pneumonia patient is admitted, evidence-based standards indicate that blood cultures should be taken prior to giving antibiotics; the Institute of Quality tracks how often that's done; if the numbers fall off, physicians undertake an initiative to improve them. Currently, 55 "best care" initiatives are under way.

At Baylor University Medical Center, data are collected through the Eclipsys 7000 hospital information system, customized internally to be known as BCON--Baylor Communications On-Line Network. Khetan says BCON didn't meet expectations at first. "It was weak initially, but it's moving in the right direction," he says.

Quality, patient safety and operational efficiency underlie other initiatives. Three years ago, Baylor was one of the first health care facilities to try the BlackBerry mobile e-mail device-- which has flourished since the Sept. 11 terrorist attacks. Now, 800 Baylor administrators, physicians and nurse managers use them. "I'm addicted to my BlackBerry," Allison says. "I'm a better CEO because of this technology." Another recent pilot, this one at Baylor Institute for Rehabilitation, tried out Vocera Communications devices, in which 50 users had almost instant voice access to each other. The project had twin goals: reduce medication errors stemming from poor physician handwriting, and reduce response time for dealing with patient falls.

Connecting with suppliers has been another key area. Baylor's materials management operations are almost completely wired; in September 2001 it started connecting to its group purchasing organization, Novation, through Neoforma's Marketplace@Novation product. Baylor added 15 of its largest medical-surgical suppliers to its e-procurement process, which integrates Lawson Software's ERP application through Marketplace@Novation. In 2002, BHCS processed 18,403 purchase orders totaling more than $43 million through the Novation product, according to Bob Nance, director of corporate services. Large suppliers that do not use the Neoforma product are reached through dial-up electronic data interchange; for smaller vendors who support neither technology, BHCS orders supplies through Lawson's e-fax technology.

Not everything Baylor undertakes has succeeded. In May, the system announced it was

ending an outsourcing agreement with Electronic Data Systems, Plano, Texas, to automate Baylor's billing process. The 10-year, $200 million deal was intended to cut average days in accounts receivable and save the system up to 15 percent on billing expenses through more accurate claims. Baylor kiboshed it a year into the deal, saying the parties couldn't agree on pricing and that the contract did not meet its original intent.

That won't stop a business office consolidation effort, though. One of the IT department's most important current ventures will convert five separate business office systems and functions into a single centralized business service and standardized information system.

Another big project is construction of a new hospital, Baylor Medical Center at Plano, Texas, slated for completion in late 2004. The facility, located in a high-growth, technology-savvy area, will encompass a 96-bed acute care adult hospital with eight operating rooms and an urgent care center; and a 163,000-square-foot medical office building. Best of all, it will be all-digital. "We felt that in this area we have to be different," Pickton says. "We're seeking to optimize care processes on our new technology platform."

About that new technology platform: remember the large clinical integration contract that Baylor tore up five years ago? The system is going through the process again. This summer, Baylor will announce an enormous contract with a single IT vendor to provide comprehensive services, after months of evaluation and negotiation. This time, it's called "clinical transformation," intended to streamline processes to provide the ideal patient experience. From 35 vendors and 70 applications, BHCS hopes to streamline to fewer than 10 vendors and fewer than 20 applications.

There are several differences from the 1998 process. Last time, Baylor went looking for technology to fit its work flow; this time, it's looking around to find who has the best tools, and is willing to redesign its work flow accordingly. The system itself is in a better position, too, no longer reeling from BBA, no longer distracted by a potential merger. Oh, and the technology's finally ready, too. "Two years ago, we would have been too early with this thing," Pickton says. "Two years from now, we'd be too late." The goal, as usual: get it right the first time, to save the 97 cents.

Philip Dunn is senior editor of Hospitals & Health Networks *and* H&HN's Most Wired Magazine.

Vital Statistics

Baylor Health Care System, Dallas

CEO: Joel T. Allison

CIO: Robert J. Pickton

Total Number Of Admissions: 82,719

Outpatient Visits (Excluding Ed And Home Care): 535,963

Acute Care Staffed Beds: 2,554

Total Number Of Employees:15,000

Number of IS/IT Staff: 279

Total Operating Budget: $1.7 billion

IT As A Percent Of Total Operating Budget: 2.78

Total Capital Budget: $219 million

IT As A Percent Of Total Capital Budget: 10.8

Percentage Of Physicians That Use A Physician's Portal For Clinical Documentation (Weighted Average)

Baylor Health Care System	2003 Most Wired	2003 Least Wired
61-80%	41-60%	0%
Source: *H&HN* Most Wired survey data, 2003		

Percentage Of Physicians That Use A Physician's Portal To Access Medical Images (Weighted Average)

Baylor Health Care System	2003 Most Wired	2003 Least Wired
61-80%	41-60%	1-20%
Source: *H&HN* Most Wired survey data, 2003		

Percentage Of Physicians That Use A Physician's Portal To Access Clinical Decision Support (Weighted Average)

Baylor Health Care System	2003 Most Wired	2003 Least Wired
61-80%	21-40%	0%
Source: *H&HN* Most Wired survey data, 2003		

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