

HCA INC.: STANDARDIZATION IN ACTION

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ABSTRACT

Ongoing government and healthcare industry initiatives clearly indicate that information technology will be the driver for change in healthcare. As systems proliferate, healthcare organizations grapple with issues of whether to choose best-of-breed systems or standardize around one vendor. For many years, HCA Inc. has been a major proponent of standardization to help meet its financial and patient safety objectives. This article examines HCA's experience and explores how standardization has been a major factor in the company's financial and clinical success, enabling faster implementation, greater quality control and significant cost-savings.

KEYWORDS

*Standardization
Patient safety
Best-of-breed*

“When the Institute of Medicine recommendations on medical errors and patient safety first surfaced, we were able to move quickly on the technology side because of our standardized information systems,” said Patsy Williams, former vice president of business solutions, information technology and services for HCA. Indeed, at a time when many healthcare providers still are

reeling from the implications of the IOM report and its recommendations for the widespread deployment of information technologies, HCA is well along in planning and implementing two patient safety technologies.

HCA began its corporate emphasis on patient safety in February 2000. By the end of 2003, 70 of the company's hospitals had already implemented the Electronic Medication Administration Record (eMAR) and bar coding system for medication administration. The remaining 116 hospitals are scheduled to go live on the application by August 2005. In addition, HCA has worked with Meditech, the hospital IS vendor, to develop an electronic ordering system for physicians. This application is being pilot tested at two HCA hospitals.

The patient safety technology initiative has moved rapidly through this large organization because HCA has been able to leverage its standardized clinical IS and an operations philosophy based on continuous improvement.

The company, which has a publicly stated commitment to delivering the highest quality patient care, is also an accepted Joint Commission on Accreditation of Healthcare Organizations (JCAHO) vendor for core measures implementation and a member of The Leapfrog Group. On the financial side, it has long been recognized as one of the best-run companies in the industry,

closing out 2002 with revenues of \$19.7 billion, and it is projecting continued growth through 2003. Williams credits standardized systems, which enable faster implementation, greater quality control and significant cost savings, as a major contributor to the company's financial and clinical success.

HCA operates 190 hospitals and 79 surgery centers in 23 states, England and Switzerland. Its 190 facilities are organized into 12 divisions, which are defined by major geographic and demographic markets. Nashville, for instance, where HCA headquarters is located, is one example of such a market. It has 11 hospitals, medical centers and surgery centers. Organizing around markets is a key strategy for HCA, said Jeff Costantine, vice president of customer account management, information technology and services. This type of grouping lends itself to resource sharing, eliminates duplication of services and procedures in every hospital and contributes significantly to cost control.

Sharing Services

As an extension of this practice, HCA in 1999 also reorganized all warehousing and back office functions and consolidated them in a number of locations. There are 10 central business offices (called patient accounts service centers) that support the 12 divisions, and to date, 8 out of 16 planned supply chain warehouses are in operation. A major impetus was the realization that HCA could not continue to "cut dollars from clinical care," Costantine said, so the company sought other sources of cost reduction. Standardizing supplies, eliminating middle warehousing and centralizing billing and collections have saved the company millions of dollars, he said.

The approach also borrows a page from the best practices of other industries, like retailing and manufacturing, which generally consolidate services regionally. "It makes good business sense. You do not need a separate business office in every single hospital," Costantine said. In addition, the move underscores HCA's philosophy that a hospital should be focused on patient care.

The Shared Services Initiative, as the move became known, began in 1999 as an idea and is expected to take about six years to accomplish. Although it may appear simple in principle, the task is more complex than it seems. "It takes more than just telling people, 'It makes perfect business sense to standardize the locations of where we perform these functions,'" Costantine said. It took a year of planning and bringing people along. One major hurdle was dealing with facility CFOs who had been responsible for financial functions in their hospitals, but suddenly realized that the

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functions would be relocated. HCA's philosophy is to take the time needed to implement changes and to ensure that people are relocated or compensated and do everything possible to be sure people do not lose their jobs.

Standardizing Clinical Information Systems

A major consolidation and standardization of clinical IS took place in 1994. At the time, HCA had a set of clinical systems that were self-developed. Although these systems were not robust, they incorporated order entry, laboratory, pharmacy and radiology. "As we merged companies, Meditech was in place in several of our facilities, and after comparing functionality, the decision was made to go with Meditech across all hospitals," Williams said. "Meditech delivered an integrated set of clinical applications that met the needs of operations."

From 1994 to 1999, the experience of

transitioning 500 hospitals to one system yielded some difficult but valuable lessons. "It's much easier to tell a few business people what to do, but when you're dealing with hundreds of nurses and clinicians, it was extremely painful," Williams said.

A huge hurdle was helping hospitals see the big picture—the long-term payoff beyond the immediate disruption, she said. The most effective strategy was showing them the benefits that eventually would be gained in time savings and quality of care improvements. Williams said she believes that physicians and nurses sometimes need time to recognize that although they may be giving up functionality to which they are accustomed in an existing product, functionality is being gained in other valuable areas. One example is the realization that being in an integrated environment across several hospitals within a market enables the creation of a master patient index (MPI) to share patient data. For nurses, a standardized environment eventually led to initiatives to standardize nomenclature within particular markets. The payoff of this transition "is definitely worth it," but it has been a six-year process," said Williams.

Influencing Standards Of Care

One of the major benefits HCA derived from operating in a standardized IS environment is the ability to perform data collection and analysis, both at the enterprise-wide level and within geographic markets. One notable example of the former is the collection and comparison of data on coronary artery bypass (CAB) surgery performed off- or on-pump. According to Steve Horner, a vice president for outcomes measurement, the data enables researchers to look at how HCA hospitals are performing this procedure and track the use of off-pump and on-pump approaches. The research has found that not only is off-pump more cost-effective, it also results in fewer complications. "We are seeing reduced lengths of stay and reduced complications as a result of that

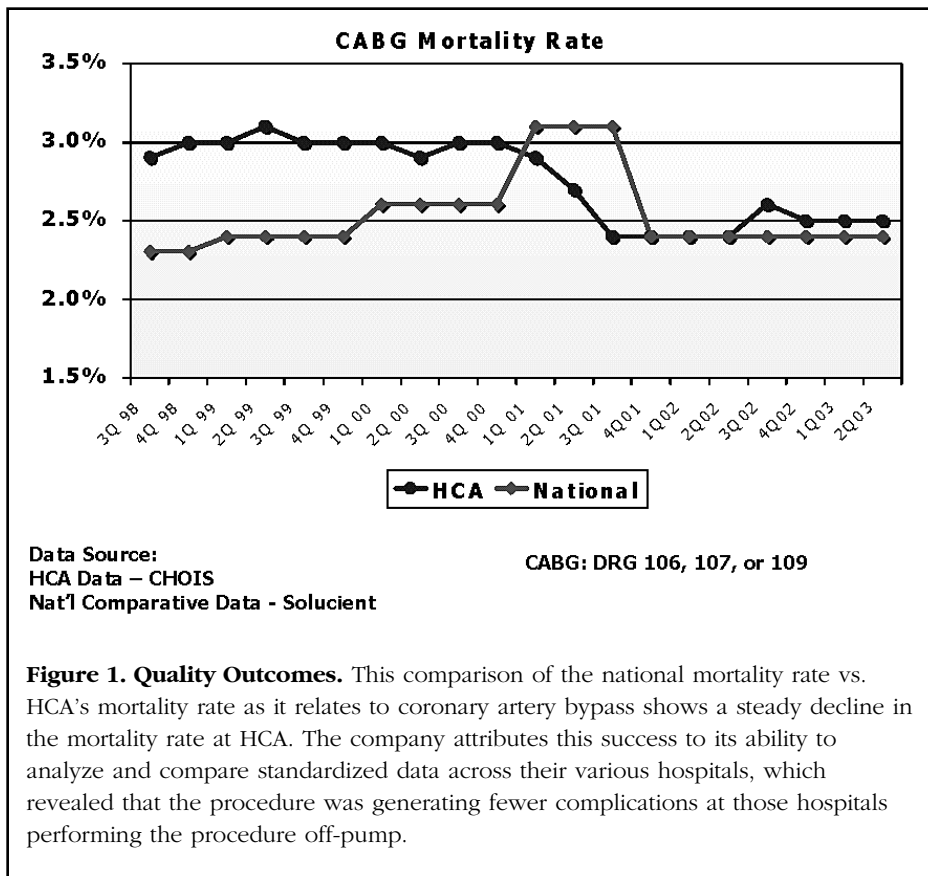


Figure 1. Quality Outcomes. This comparison of the national mortality rate vs. HCA's mortality rate as it relates to coronary artery bypass shows a steady decline in the mortality rate at HCA. The company attributes this success to its ability to analyze and compare standardized data across their various hospitals, which revealed that the procedure was generating fewer complications at those hospitals performing the procedure off-pump.

procedure," Horner said.

When research determines results like this, HCA takes the information one step further and helps promote standards of care. The approach is not "to force these standards on anyone," Williams said. "We present the data that shows 'These hospitals do X percent of their CAB procedures off-pump, and here are their outcomes, which are outstandingly better than on-pump.'" Clinicians are motivated to do a quality job and respond better to documented benefits than to a "you-must-do-this" approach. The most dramatic impact is that HCA's mortality rate for patients undergoing CAB has dropped significantly, Horner said. (See Figure 1)

Another timely byproduct of data tracking relates to patient visits in the emergency department on any given day. "We are able to run through the data and see how many white blood cell counts (WBC) have been done that day and what the results of those tests are," Horner said. "We're in the process of putting statistical parameters in place to

indicate when two or three standard deviations have been exceeded." Such occurrences would signal the need for further investigation because they might represent outbreaks of pneumonia, influenza or a bioterrorist event.

Because 30 percent of HCA's admissions come through hospital emergency departments, the organization is looking to use data to triage patients more effectively and to analyze the amount of time it takes to move a patient through the emergency department. Future analysis will answer questions such as: Are patients moving quickly enough through the process? Are diagnoses being made in timely manner? Is lab, radiology, or some other area holding them up?

Core Measures

These examples represent only "the tip of the iceberg in terms of what can be done with clinical data to improve the quality of care," Horner said. The use of standardized data to cull information has also facilitated HCA's compliance with core measures reporting, as

required by JCAHO. Rather than requiring each hospital to abstract information from their medical records for the system, HCA can tap into the system to automatically gather the data.

HCA operates Meditech systems in a distributed regional data center model. There are no Meditech processors located at individual hospitals; processing is centralized at one of a few data centers spread throughout the country. The core clinical hospital IS is standardized throughout the company on the Meditech clinical platform. Each of HCA's markets has implemented the Meditech product suite using a common MPI so that a longitudinal cross-market patient database is maintained. Master files within the ancillary product areas (e.g., pharmacy, laboratory, radiology and clinical documentation) are standardized within the market to maintain continuity and consistency of information.

"With our current clinical systems, we are able to capture 30 to 40 percent of all the data elements we need for core measures," Horner said. "Not only does this improve the efficiency of data collection, it also enables HCA to keep more nurses at the bedside providing patient care and thereby not further aggravating the nursing shortage in HCA facilities." HCA corporate recently issued its first report to all its hospitals, generated from COMET, as the system is called. Individual hospitals then can evaluate where they stand in terms of compliance and plan for any necessary improvements.

COMET is an HCA-built system designed to meet JCAHO requirements for performance measurement systems to embed core measures. COMET is a Web-based application, housed on the HCA intranet, that enables the combination of data from HCA's clinical systems (Meditech) and administrative claims database so hospitals have to do minimal retrospective chart review to collect core measure data. COMET also enables hospitals to enter any missing data elements and supplies reports to hospitals so they can see how well they are doing on the core measures in near

real time. All HCA hospitals use COMET to meet the JCAHO Core Measure Requirements, as well as to collect and submit data to CMS as part of the National Voluntary Hospital Quality Initiative sponsored by AHA, FAH, AAMC, JCAHO and CMS. All HCA hospitals participate in this initiative and were able to do so at the onset of the program in June 2003 because of its centralized systems.

Because of this system's capabilities, HCA has been selected for listing by JCAHO as a vendor. As a result, HCA will accrue further savings from not having to outsource this all-important task. This means that HCA did not have to purchase a JCAHO-listed performance measurement system from a third party vendor—saving the cost of this purchase and ongoing licensing fees. Because it is not using an external system, HCA also does not have to manually enter all the data into a system or build and maintain interfaces to all electronic capture of the data.

HCA's plans for the future include using the system to tap into the new CPOE program and collect core measures data as needed. This will prevent nurses from having to document within the system; it will automatically be recorded in the CPOE process. Currently, nurses or case managers are documenting information that addresses the core measures in Meditech, and then that information is extracted into COMET. After the ePOM and eMAR systems are live, information can be extracted directly from there, and nurses will not be required to do any additional documentation.

Progress on Nomenclature

Jay Levy, HCA's assistant vice president for IT&S clinical systems product development, agrees that standardization provides great opportunities to use data retrospectively and points to the master patient index as a prime example. The MPI is used across the market and the standardized clinical master files described earlier to support building a database of longitudinal patient information. Additionally, the WBC and COMET projects exemplify retrospective use of the

standardized data.

HCA's master patient index, which is based on a Meditech generated internal number, is the key component that facilitates the linking of clinical history across visits within the same hospital and then across hospitals in the same geographic area. Having this common clinical reference enables several important processes, Levy said. It simplifies the registration process for a return visit, populates the required demographic data and serves as a verification process. It also gives physicians and other clinicians a single source of data that provides

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information about a patient's recent activity and a history of all encounters at that particular institution, as well as encounters at other institutions.

Standardization of nomenclature has also produced benefits in past research, such as HCA's experience with white blood cell counts. Analysis of data was facilitated because most facilities use that term consistently. While HCA currently does not have nomenclature standards across the company, nomenclature is standardized for each market, and Meditech enables this implementation.

The potential benefits of standardized nomenclature have prompted HCA nurses in the western United States to begin developing a standard nomenclature. On the corporate level, developing an enterprise-wide clinical data repository is next on the horizon, Williams said. “Although we have a pilot budgeted for this year, we decided to postpone it until next year. We want to get the patient safety initiatives rolled out first,” she said.

The Challenge Of Change

HCA's extensive experience with transitions has led to a “soft-coercion” approach to implementing change. “As a community hospital provider, we generally do not manage or employ our physicians,” Williams said. “Instead of mandating change, we are far more successful letting people know the facts and allowing them to see that there is a better way to do things.”

When performance evaluation requires improvement in a particular area, clinical staff who are experts in that area work with the staff in specific hospitals to identify and validate root causes of issues. Hospitals then are given tools such as protocols, guidelines, policies and procedures that will help them make improvements in their facilities. In addition, the clinical staff for each corporate service line has an advisory board or a group made up of hospital staff and physicians in each particular specialty. “Physicians are excited to work within a group and will often go to other hospitals to help present data or talk to their physicians,” Williams said.

Another major area of transformation for HCA is getting full use of the system's documentation capabilities. Although all HCA hospitals use Meditech for functions like registration, basic order entry, lab and pharmacy processes, they are using it less consistently in the area of documentation, Levy said. “One of our drives this year is to try and generate some standardization around how nurses and other clinical users are using the system for documentation,” he said. One driving force in this effort has been the integration of core measure elements. If a hospital uses clinical documentation to capture those elements, it does not need separate data entry. “Making nurses' jobs easier and having them recognize the benefits of automation has the added advantage of helping retain and recruit nurses,” Williams said.

Networking also plays an influential role in facilitating technology adoption. Having people share examples of what the system is doing for them is infectious. To take advantage of this, about

three years ago, a large group of nurses was brought together to talk about best practices. HCA also has many active e-mail distribution groups, one of which represents the company's emergency department directors, who frequently share information, both formally and on an ad hoc basis. Supply chain management also circulates information on best practices on a more formal level. Before new ideas are circulated as best practices, a panel reviews submitted documentation to ensure that they produce improvements in quality or financial savings.

In terms of the best pace and timeframe for introducing innovations, Williams recommends starting with the simpler ones first, such as medication administration. "Because we are already using Meditech in our pharmacy and nursing documentation, we rolled out eMAR first," Williams said. Implementing a system like CPOE, on the other hand, will require more of physicians' time and, therefore, will take more time and work before the medical staff accepts it.

Both Williams and Levy recommend starting out with simpler initiatives like record review; it helps physicians get engaged and gives them an immediate benefit without intruding on workflow. Other systems that can entice use include those that enable electronic signatures or that convert inpatient pharmacy orders to outpatient discharge prescriptions. These systems use some of the same tools as CPOE, yet save time and provide workflow benefits.

It is also important to convince physicians that these systems provide added value and that their use is tied to quality initiatives—not just to efforts to boost productivity. In the long run, physicians will appreciate initiatives that produce time savings, Levy said. They end up not having to do call backs, respond to pharmacy calls or do reorders. Levy believes that benefits will be a strong selling point with physicians for CPOE.

This system is much more than an ordering process, he said. "Automating the entry of an order is supported by the presence of other clinical information, such as a particular lab result or a

medication order that is reviewed against other medications in the patient's profile. Having that integration across products, visits and hospitals builds a nice foundation for a complete CPOE environment," he said. Appropriate usage of rules and alerts is also being piloted as part of this ordering initiative.

Another important aspect of standardization involves working with one vendor and reaping benefits from that relationship. "When you are as large as HCA and you are investing a huge chunk of your business with one company, you expect to be treated

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differently," Williams said. For HCA, this means having Meditech provide a separate development group and a separate support group. The company also has added leverage when it discusses specific issues with Meditech, as it can present concerns as a company and not as an individual hospital.

HCA eliminates the contact between hospitals and vendors entirely. HCA provides help desk functions, and tech support calls go directly from the facility to that unit. This enables HCA to assess what problems are cropping up throughout the company. Because vendors save time and money by not having to market to individual hospitals, HCA expects to see these cost savings reflected back to the company.

The Bottom Line

A healthy bottom line is obviously important to HCA. On the other hand, everyone agrees that the clinical initiatives being implemented are not based

on meeting any specific financial return on investment goals. HCA's commitment to quality patient care is highly regarded; for example, when representatives from the Leapfrog Group visited corporate headquarters to review its patient safety program, it was mutually decided that HCA should become a part of that organization. HCA is both a provider and user of healthcare with more than 180,000 employees.

Ongoing government and industry efforts have made it very clear that information technology will be the driver for change in healthcare for the 21st Century. Choices as to which systems to implement also are proliferating at a dizzying pace. Organizations are pondering whether they should integrate applications or whether they should attempt to standardize system selection. While the rest of the industry ponders the issues, HCA will stay the course.

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