

arcplan
case study

HCA

Improves financial, managerial, and clinical processes with arcplan Enterprise

Process-Driven Analytics

In the face of increasing competition, a growing number of uninsured and underinsured patients, and stricter guidelines by private insurers and government, HCA, which owns and operates approximately 179 hospitals and approximately 104 freestanding surgery centers in 21 states, England and Switzerland, is on the cutting edge of using data to work smarter.

HCA

It's you, it's me, it's all of us.

”arcplan “allows us to respond to anything going on in the industry.” --

Lisa Summers, HCA Financial Services Group COO

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HCA employs arcplan Enterprise across the corporation, to improve financial, managerial and clinical processes and make more informed decisions to better patient care, reduce risk, cut costs, and continue expansion in at least five separate major initiatives. The following study details two of HCA's more recent and larger applications built with arcplan's Process-Driven Analytics.. These user-friendly applications span multiple and varied data sources containing phenomenal amounts of data: the Revenue Cycle Executive Management and Reporting (EMR) portal, and Emergency Department (ED) Dashboard applications.

→ EMR Dashboard: The Challenge

In 2001 HCA embarked on an initiative to centralize service revenue cycle operations and automate reporting for its 178 hospitals and 92 outpatient surgery centers. External market forces driving the move included lagging collection rates due to an increasing number of uninsured and underinsured patients.

HCA accountants and analysts had difficulty extracting meaningful data from the existing paper-based reporting system. This included accessing targeted information concerning HCA's 1.6 million admissions (or almost 2.5 million equivalent admissions) a year from a number of stand-alone information silos. Analysts attempted to answer many questions with numerous complex reports, which contained redundant information.

In addition to the sheer volume of data –18 terabytes– and the challenge of merging two diverse systems into one front-end portal solution, HCA wanted to maintain a common look and feel for all reports while meeting the needs of a diverse group of users. Stringent HIPAA privacy and security requirements would also need to be met. Last but not least, HCA knew its employees faced a paradigm shift from a labor intensive, paper-based reporting environment to that of a dynamic, Web-based, user-driven one.

The time had come for its 10 Patient Account Service Centers to find a more efficient and effective way to increase access to, and enhance analysis of, the incredible amounts of data from its NCR Teradata data warehouse and Hyperion Essbase systems. It didn't want to commit the resources to develop a front-end reporting solution in-house or implement a generic, off-the-shelf solution, which might meet only some of their requirements.

→ The Solution

After a previously unsuccessful attempt using a competitor's reporting tool on a much smaller scale in one of its business units, HCA reviewed the field of business intelligence providers thoroughly and decided to implement arcplan Enterprise for Process-Driven Analytics. A proof of concept proved that arcplan Enterprise could rapidly build and maintain custom applications to satisfy its summary and detail reporting requests.

HCA's Business Intelligence Service Center and Enterprise Reporting Committee then teamed up with consulting firm Infinis Incorporated, an information technology solution's provider, and arcplan consultants to help plan and deliver the innovative arcplan-based Revenue Cycle Executive Management and Reporting (EMR) portal solution. The first report went into production in March of 2002. The solution's end users, financial analysts, accountants and managers alike, were also consulted during the design process.

Enterprise

EMR Software in Use:

- **arcplan Enterprise**
- **Hyperion Essbase**
- **NCR Teradata**

From the start, the team decided to begin the project with a clean slate by taking stock of where the business was going and what its future needs might be. They decided not to replicate the labor-intensive processes or staid look and feel of its old reports. arcplan enabled the building of graphically rich reports, easily accessed and customized to HCA's 950-plus end user's preferences, to enhance visualization and understanding of data.

When the project completed in October of 2003, the EMR solution automated the tracking of numerous performance metrics, including performance and productivity, and credit balance, insurance denial, discrepancy and upfront collection analysis. A user need only access the portal, choose the desired reports and then select dimensions, time periods and whatever view they wish to have of the data. Drill-down to patient details could be made with the click of a mouse.

"arcplan's flexible platform enabled us to quickly build very dynamic applications," said Steven Huddleston, HCA's director of Financial Services. "For instance, our accountants can still view tables of data, but, for those who are more visual, it's simple to toggle between grids, graphs and chart formats."

"We believe our solution is innovative because we are the first large healthcare company to use technology such as this in operations," he added.

EMR also provides tight integration with HCA's Active Directory profiles to provide seamless login and automated security, ensuring access level-based viewing of patient information to meet stringent HIPAA privacy and security requirements.

User acceptance of the arcplan-based portal solution is measured weekly and runs up to 1,000 hits per week. A similar business intelligence tool, previously in place against one of the patient data marts, averaged less than 100 hits a week as it lagged in performance thus frustrating users.

"User acceptance is high because EMR has made it easy for users to interact with our data warehouse," Huddleston said. "And it's also fast, enabling HCA's accountants to pull up aggregations of up to 200 million records in less than 20 seconds."


EMR has proved a hit with HCA employees and continues to grow as it is marketed out to the field, new cubes built and more reports placed on the portal.

→ The Benefits

The portal solution, which enables users to go from summary level information to patient-level detail, has improved HCA's processes, culture and bottom line. The solution has eliminated batch reporting, removed redundancies and reduced confusion in the data, improved cash flow, and helped HCA reduce bad debt through better risk management.

End users, freed up from performing the more clerical and technical duties of reporting, are empowered to perform more targeted analysis. The automated system makes data instantly available, eliminating the need to pull data or crunch numbers. Monthly and quarterly closes take one day instead of five. Everyone from the analyst to the executive gets the information they need when they need it from one central repository of information.

"We see this tool as the delivery platform for the whole department and feel it will continue to meet our needs as the business changes," said Huddleston. "We're indirectly making better decisions as more data is made readily available and it's empowered the user community to find their own answers."



“This tool has enormously reduced the hours we spend each month running queries to analyze changes and trends in our business,” Ted Moody, CFO, HCA Account Services in San Antonio, added.

The solution greatly improved HCA’s understanding of their demographics and helped it define target markets while guiding collection processes and up-front payment policies. And this important information is not only centralized, but easily shared. What best practices are learned in one of HCA’s 10 area service centers are shared with the rest. For instance, if the service center in Las Vegas is qualifying a patient in 30 days, that practice can be shared with the Miami office which might be taking 100 to do the same.

“From a management perspective, EMR allows us to respond to anything going on in the industry,” Lisa Summers, HCA Financial Services Group COO, said.

EMR Benefits:

- **Greatly improved revenue, debt collection rate and cash flow**
- **Automated security management to meet HIPAA requirements**
- **Reduced hours spent on queries and analysis.**
- **Provided a consistent look and feel for all users**
- **Virtually eliminated paper-based reporting**

→ ED Dashboard: The Challenge

Suzanne Stone-Griffith, Asst. VP of Quality for HCA, was given an almost impossible quality task: all of HCA’s ERs needed to reduce wait times, shorten lengths of stay, and avoid people leaving the ER without care and treatment in the face of growing volumes.

The answers could be found in the data. But the collection and analysis of data was done manually and thus prone to inaccuracies and inconsistencies. Some facilities had better data collection practices than others. Decision makers couldn’t always be sure what they were viewing was the whole or real picture, and so many times they could do nothing else but lead partly by intuition. But guesses and mistakes, even small ones, are increasingly risky in today’s fast-paced, ever more competitive health care market.

The other obstacle HCA faced was time. HCA’s ERs saw millions of patients a year and the sheer volume of data was vast and the geographical spread of facilities posed a challenge. Making the changes that needed to be made would require the latest BI technology, and an overhaul of the system and the mindset of ED Directors and hospital leadership.

“We needed a real-time solution,” Stone-Griffith said. “It was ineffective to provide data one and a half months old and ask directors to make meaningful improvements. The data also needed to be accurate and robust so it could serve multiple purposes. We wanted to leverage the information HCA already had and pull that information together in one view so the end user could make use of the multiple variables that drive efficiency and quality in an ER.”

“If you don’t understand what’s impacting your ER, you’ll do everything you continue to do, and make the same mistakes over again,” she added.

At the heart of the initiative was one question: How long does it take a patient to go through the emergency department process, from the time they walk through the front door, to registration, triage, getting a bed, diagnosis, treatment, and release? HCA needed real-time metrics about patient flow and throughput in the ER and all the contributing factors, including facility management, provider productivity and ancillary services. The answer to this question would drive quality, outcomes and patient satisfaction.

→ ED Dashboard: The Solution

After witnessing the successes of HCA's financial and human resource applications built with arclan Enterprise, Stone-Griffith decided to see what benefits could be derived in a clinical application for the quality services initiative. Planning work got started in July 2004 and the application went live across all of HCA's ERs in January 2006.

The Emergency Department (ED) Dashboard solution pairs arclan Enterprise with Hyperion Essbase and holds 100 gigabytes of data. Information is consolidated into Microsoft SQL Server and loaded into 5 different cubes. Fifteen reports—three serving executives and four of each focusing on ER turnaround, lab work and radiology—were produced initially. Each enables thousands of users, including every hospital and division executive, every ED director and Quality director. More importantly every member of the organization is looking at the same number for any given time frame or metric.

The initiative had its hurdles, for instance, cleaning up the existing data stores before users could rely fully on ED Dashboard, but the solution, which was customized to HCA's specific needs, is winning the respect and acceptance of users.

"We have 160 ERs live on the solution with 100-percent patient input and good compliance and accuracy," Stone-Griffith noted. "That in itself was a feat. "It's also faster for our providers to click on information in real-time than for them to pull a bunch of charts," she added. "I've got to believe that's meaningful as well."

Built-in metrics alert users to make changes on the fly. For instance, HCA wants every ER patient to be seen by a physician within 45 minutes of arrival, and stop lights (green, yellow, red) give providers a status so they can make adjustments to hit that 45-minute goal.

"Now we are data-driven and analytic," said Stone-Griffith. "It gives us infinite ways to look at our ERs."

→ ED Dashboard: The Benefits

ED Dashboard has given all of HCA's providers, medical directors, executives, quality improvement team and even its board members a central point of access to form a clearer picture of what's happening in their ER's.

The solution is used daily to track patient flow when various physicians work. Each provider is easily called up by name and sorted by volume, average time spent with patients, day of week and patient population, etc. to determine if providers are creating a difference. This sets up a very different type of conversation with medical directors. Opinions are data-driven, not subjective.

For instance, ER site assessments, which look at anything—from provider productivity to bed management, to the effect of ancillary services on flow and turnaround of CT exams and MRIs—play an important role in the allocation of resources. The staff of one ER may feel a new facility is in order, but is it really needed? Such decisions are made that much easier and more convincingly with all the data in hand. And ED Dashboard tells HCA leadership where to spend the dollars and focus energies.

"I know now that I can use this to paint a picture of how an ER runs before I set foot in the door for an assessment," Stone-Griffith said. "Our capital/design and planning folks are already using the solution to make determinations about capital investments."

The benefits for patients are also great. The solution aides provider's abilities to evaluate patients with high risk clinical presentations to ensure they get to the next level of care correctly and in a more timely manner. "It's about the right treatment the first time, and their perception of timeliness and wait time," Stone-Griffith said.

ED Benefits:

- Shortened the time needed for registration and treatment of ER patients
- Alerted users to affect process change on the fly
- Helped set best practice procedures across all ER facilities
- Enabled effective allocation of resources

Processes within the ER are easily monitored and tweaked and these best practices shared across the HCA enterprise.

"The ED Dashboard provides a real-time toolkit to analyze your patient flow. You have a constant pulse of quality of service in the ER. In addition, the tool enables any facility to benchmark against others that have common attributes other than sheer volume. This allows a director to find solutions and share success with greater speed, and we all learn exponentially."

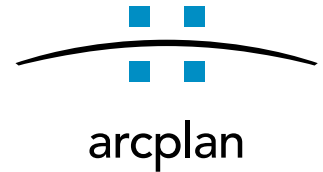
Looking Ahead:

The arcplan Enterprise-based solution's flexibility and scalability is proving a boon for HCA. Other initiatives using arcplan are reaping similar benefits in other departments, and the platform is expected to play a leading role in a new outpatient services strategy to improve operational performance.

In the months ahead, HCA is planning new enhancements to EMR to meet its future needs. "We have no doubt EMR will continue to evolve to meet internal and external challenges," Huddleston said.

We have already enhanced the dashboard based on end user feedback. Work is underway to add enhancements, and a third phase is planned to extend the application. There is also discussion about extending this application to the surgical arena. The long-term goal is to enable information to be shared automatically without the need of human data entry, creating a one-stop metric, analytic and benchmarking tool.

"I don't think metrics are going away, if anything they are going to be drivers of performance," Stone-Griffith said. "I see this solution, which is very flexible, being able to support the changing needs of data."



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