Supply Chain Metrics That Matter: A Focus on Hospitals

Using Financial Data from Corporate Annual Reports to Better Understand the Hospital Supply Chain

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Supply Chain Insights LLC
Research

*Supply Chain Metrics That Matter* is a series of publications published monthly by Supply Chain Insights LLC. They are a deep focus on a specific industry.

Within the world of Supply Chain Management (SCM), each industry is unique. To help companies understand the differences and similarities between industries, we share deep analysis in each report.

While we find it useful to understand the evolution of supply chain excellence by comparing industries, we feel the true stories of supply chain excellence can only be really understood by comparing what happened within a period by peer group. The goal of this series is to share these insights.

Disclosure

Your trust is important to us. This independent research is 100% funded by Supply Chain Insights. As such, we are open and transparent about our financial relationships and our research process.

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Research Methodology

The basis of this report is publicly available information from corporate annual reports from the period of 2000-2011 for publically-owned companies operating hospitals and other healthcare facilities. In picking companies for the Supply Chain Metrics That Matter reports, we identify two companies ranked on the 2011 Global 500 operating within the industry of focus. We augment this with two hand-selected companies that we believe provide a meaningful comparison. This analysis thus focuses on four companies within the industry. We use the financial data to help readers learn from past trends, better understand current operating environments, and provide recommendations for the future. We augment the financial data analysis with information from our quantitative and qualitative research studies as well as work with clients operating within the industry.
Executive Overview

Growth is slowing. Profitability is tougher. Compliance mandates are growing. How do companies balance the goals for value-based outcomes for health and wellness with costs? In this environment, supply chain matters more than ever.

In this report, we share insights on healthcare supply chains. Grown out of the offices of procurement, the supply chain function of the hospital is still in its infancy; but based on increasing business requirements and complexity, it is only beginning to show its true potential.

Growth: Futures are Uncertain.

The hospital administrator is facing many challenges. Growth is slowing and pressures are growing. The question is how to balance patient outcomes with better cost management. How does a hospital move forward with an uncertain future? And, what will be the impact of healthcare reform?

In table 1, we list top line growth over the past decade for four companies operating within the hospital industry. While there are ups and downs, the general trend is downward.

Table 1. Year-over-Year Sales Growth (2001-2011)

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<td>26%</td>
<td>29%</td>
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<td>HCA Holdings Inc.</td>
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<td>Tenet Healthcare Corporation</td>
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<td>2%</td>
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<tr>
<td>Universal Health Services, Inc.</td>
<td>9%</td>
<td>8%</td>
<td>13%</td>
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Source: Supply Chain Insights LLC, Corporate Annual Reports (2001-2011)

With declining growth, hospitals are looking for new ways to drive value. Improved supply chain management, and redesign of the supply chain from patient back to hospital, represents a significant opportunity for the industry.
Profitability: Dueling Objectives

Hospital supply chains face dueling challenges on two fronts: health/wellness and cost. Balancing the two is difficult. With declining sales growth, as illustrated above, companies are slowly realizing it is impossible to sustain growth without properly balancing their dual mandates.

So, what is the state of the healthcare supply chain? To understand this, let’s start by analyzing the trade-offs between cash-to-cash cycles and gross margin. The most mature and highest functioning supply chains demonstrate both resiliency (defined as a tightly clustered pattern over time) and sustainable improvement (defined as slow year-over-year progress towards the Best Scenario of low C2C values and high gross margins).

Figure 1. Cash-to-Cash Cycle vs. Gross Margin (2001-2011)

The patterns are not consistent. The industry is not mature enough to represent an industry pattern. Instead, we have individual actors.

Universal Health Services, Inc. has the tightest pattern and demonstrated the highest level of resiliency over the time period. However, they have lost ground on their C2C value. Tenet Healthcare Corporation, on the other hand, has driven great improvements in C2C, but operates in a completely different and lower region of the graph in regards to gross margin.
Here we see a clear divide on gross margin values with three of the four companies recording very high gross margins exceeding 0.7. Tenet Healthcare Corporation, however, has a low value and has lost ground over the past decade.

**Complexity: Revenue per Employee**

Another insightful comparison is inventory turns versus revenue per employee. Our research finds that revenue per employee is the best measure of improved efficiency through the investment in various Enterprise Resource Planning (ERP) or Advanced Planning Systems (APS) technologies. Figure 2 below illustrates the performance of the same four companies on these two metrics.

**Figure 2. Inventory Turns vs. Revenue per Employee (2001-2011)**

Here we see mainly one dimensional movement and horizontal evolution as companies have increased their returns on revenue per employee. Again, there is no consistent pattern in regards to inventory turns with some companies remaining stagnant (Community Health Systems in purple), some decreasing (HCA Holdings Inc. in lime green) and others improving (Tenet Healthcare Corporation in red). Thus, we find that while companies have increased their productivity as measured by revenue per employee, inventory turns remains a problem for companies operating within the hospital industry.
Cycle: Inventory Management

"We reduced the numbers for what [nurses] thought they'd be using. In some cases, they had a 10- to 12-day supply sitting on the shelves, and they were down to three to five a day for most items. That was a dramatic reduction."

• Rick McFee, Director of Supply Chain Management at Texas Children’s Hospital

Most hospitals are focused on inventory management. The results are also scattered and unpredictable. The equation for inventory turns is illustrated below:

\[
\text{Inventory Turns} = \frac{\text{Cost of Goods Sold}}{\text{Inventory}}
\]

Inventory turns is best understood as the complete utilization and replacement of inventory within the system. For example, a value of twelve would mean that once a month, inventory is completely cycled through with all inventory stores being depleted and replaced by new stockpiles.

Table 2. Average Inventory Turns (2001-2011)

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<td>Universal Health Services, Inc.</td>
<td>13</td>
<td>15</td>
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Source: Supply Chain Insights LLC. Corporate Annual Reports (2001-2011)

Tenet Healthcare Corporation has the highest inventory turns results and has shown significant improvement over the time period. Other companies demonstrate a more stagnant situation. The reason that inventory management matters is simple. More effective inventory management frees up cash to be used in other activities throughout the hospital, as opposed to sitting unused in the back of storerooms.

Cycle: Cash Flow and Payables

The cash-to-cash cycle is one of the most popular supply chain financial metrics for its ability to provide a holistic picture of the enterprise and cash flow into, within, and out of the company. Improvement in the C2C cycle is shown with decreasing numbers. Unfortunately, that is not the trend illustrated by the companies in figure 4 below.

Figure 3. Cash-to-Cash Cycle (2001-2011)

Over the past decade, industries have taken different approaches to the C2C cycle. The recent Supply Chain Metrics That Matter: Focus on the Cash-to-Cash Cycle report profiled five industries. Here we look strictly at the hospital industry. In order to understand the different ways of affecting the C2C cycle, it is important to dig into the components of the C2C cycle. The requisite equations are shown below:

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John Warrington, Deputy Director of Policy and Research at the UK’s National Health Service (NHS) estimates that €950 million is tied up in consigned stock within the NHS system. This plus lost and out-of-stock inventory is simply written off each year.

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\[\text{Cash to Cash Cycle} = \text{Days of Inventory} + \text{Days of Receivables} - \text{Days of Payables}\]

\[\text{Days of Inventory} = \frac{\text{Average Inventory}}{\text{Cost of Goods Sold}} \times 365\]

\[\text{Days of Receivables} = \frac{\text{Accounts Receivable}}{\text{Revenue}} \times 365\]

\[\text{Days of Payables} = \frac{\text{Accounts Payable}}{\text{Cost of Goods Sold}} \times 365\]

With this information in hand, it is possible to determine that any company has three different methods of affecting their C2C cycle. To achieve a lower (and better) value, a company may decrease Days of Inventory, decrease Days of Receivables, or increase Days of Payables. Improved inventory and receivables management have an ultimate positive effect on the internal supply chain and external value chain as they increase efficiency within the system. Increasing Days of Payables has a less clear effect as increased terms of payment to suppliers can create a brittle supply chain through withholding payment from upstream suppliers. In the worst-case scenario, such optimization of Days of Payables can cause suppliers to enter bankruptcy due to cash flow problems. Here we try to understand the changes in Payables that different companies are using to affect their C2C cycle. Table 3 below illustrates the average Days of Payables values for the four hospital companies over the period of 2001-2011.

Table 3. Days of Payables Averages (2001-2011)

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<td>Tenet Healthcare Corporation</td>
<td>61</td>
<td>59</td>
<td>49</td>
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<tr>
<td>Universal Health Services, Inc.</td>
<td>81</td>
<td>73</td>
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Source: Supply Chain Insights LLC, Corporate Annual Reports (2001-2011)

In table 3, we see minimal amounts of progress in lowering Days of Payables. Community Health Systems Inc., for example, have decreased their DOP value by 51 days over the time period. However, their 2008-2011 result is 119 days which is still 17 weeks (over 4 months) that suppliers are waiting for payment. While payment terms will vary between industries, this value seems excessively long especially given that the Receivables value for the same company and same time period was only 50 days.
HCA Holdings Inc. on the other hand has actually seen an increasing value for DOP from 94 in the first time period to 111 in the last. This increase of 17 days shows an additional half of a month that HCA is holding cash before passing money owed down to suppliers. The concern would be that these longer terms are starving upstream partners of cash flow and potentially jeopardizing the financial viability of upstream suppliers.

Finally, improving Days of Payables has the potential to effect both inter- and intra-company functioning. By increasing the rate at which payment is passed through the value chain to suppliers, hospital companies will not only strengthen and optimize their own operations but also increase the strength and resiliency of the entire value stream. This is a win-win that should be further investigated and optimized.

**Rethinking the Value of Procurement**

Procurement in the hospital space has historically been conducted with a focus on lowest cost to serve. Inventory and supply costs are usually estimated at between 30% and 40% of a hospital’s budget and minimizing those costs has been the top priority for decades. In addition, procurement has existed in a departmental silo, separated from other functions of the hospital; and often, even separated from other procurement departments within the same organization. The effect has been very inefficient ordering processes.

We believe that hospital organizations are currently in the middle of a revolution of thinking about procurement. In the future, we expect procurement to no longer act as a cost-center, but instead, focus on driving value-based outcomes. By integrating horizontally the procurement transactions of a single hospital or several hospitals, there is great opportunity for clarity on processes and cost savings.

Furthermore, open communication with nurses, doctors, and other clinicians creates an opportunity for feedback about the quality of the supplies. If a more expensive tool lasts three times longer than its slightly less expensive counterpart, it becomes a possibility that the higher priced component is a better value proposition for the organization. By tearing down the silo that has traditionally contained and isolated procurement departments within the hospital, companies may reorient and draw value from open communication across the enterprise resulting in more effective procurement activities.

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Recommendations

"For a world class supply chain we need to have data fed through from point of use. The problem is that there is limited sharing of information. Each link in the supply chain works with its own interests at heart so there is disconnection."

• John Warrington, Deputy Director of Policy & Research, NHS

As hospitals continue to balance cost concerns versus quality of care, the future is uncertain; but, the opportunities for supply chain to play a critical role are very high. With a redesign of hospital supply chains, and a new understanding of inventory management and procurement, supply chain can move from an isolated cost center to a critical partner in guaranteeing the best prices and care for patients. These are our recommendations:

• **Rethink What Supply Chain Means to the Organization.** In the world of hospitals, supply chain has often been perceived as a necessary, but uninspired function. However, that perception is changing as the understanding of supply chain excellence moves from one of lowest cost to one of flexibility, agility, and prioritizing patient care. The supply chain function can provide a critical advantage in maintaining the delicate balance between cost and patient care in the hospitals of the future.

• **Inventory Management Matters.** Improved inventory management offers a simple method in which to drive substantial improvements within hospital organizations. It is not simply a need to reduce inventory levels, but to more accurately provide the correct level at the correct time and place. Results of the cash-to-cash cycle indicate that all of the hospitals profiled in this case study have struggled with inventory over the past decade. Furthermore, collaboration with doctors, nurses and other clinicians enables the procurement team to better identify the specific inventory necessary for optimal patient care.

• **Embrace Big Data.** Big Data represents a phenomenal opportunity for hospitals to create visibility within the healthcare chain. As expressed by Warrington above, there is a lack of information sharing within the healthcare industry as a whole. More transparent data sharing could enable the entire team of hospitals, doctors, nurses, pharmacists, medical device suppliers and others to create a more cohesive and holistic plan of healthcare for patients.

• **Rethink Terms on Payables.** Although increasing terms on payables is a valid approach to improve performance on the cash-to-cash cycle, it is a potentially harmful

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4 Supply Chain Movement. Overhaul of supply chain will save millions on health care.
http://www.supplychainmovement.com/overhaul-of-supply-chain-will-save-millions-on-health-care/?goback=%2Egde_100178_member_192421138
action. Hospitals should be wary of increasing payables too much as it has the potential of ultimately weakening the supply chain by starving upstream suppliers of cash. In the future, we believe a supply chain will morph into an end-to-end value chain, from consumer back to origin, and hospitals would do well to redesign the payables process with a focus on the holistic advantage for all partners within the chain.

Conclusion

The hospital operating environment is changing. The space is getting more expensive and companies are realizing that patient care and cost control do not need to be conflicting objectives. We believe that a refocus on supply chain processes and design has the potential to serve as a differentiator in hospitals in the future. By embracing supply chain as a value-adding proposition, and redesigning the supply chain for optimized patient care and cost objectives, hospitals can achieve the best of both worlds. A focus on supply chain metrics can help in that coming redesign.

Company Profiles

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<td>7.5</td>
<td>46.5</td>
<td>USA (Pennsylvania)</td>
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Source: Supply Chain Insights LLC, Corporate Annual Reports 2011
Appendix

Other Reports in this Series:

Check out our other reports in this series:

Supply Chain Metrics That Matter: A Focus on Retail
Published by Supply Chain Insights in August 2012.

Supply Chain Metrics That Matter: A Focus on Consumer Products
Published by Supply Chain Insights in September 2012.

Supply Chain Metrics That Matter: A Focus on the Chemical Industry
Published by Supply Chain Insights in November 2012

Supply Chain Metrics That Matter: The Cash-to-Cash Cycle
Published by Supply Chain Insights in November 2012

Supply Chain Metrics That Matter: A Focus on the Pharmaceutical Industry
Published by Supply Chain Insights in December 2012

Supply Chain Metrics That Matter: Driving Reliability in Margins
Published by Supply Chain Insights in January 2013
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Supply Chain Insights LLC (SCI) is a research and advisory firm focused on reinventing the analyst model. The services of the company are designed to help supply chain teams improve value-based outcomes through research-based Advisory Services, a dedicated Supply Chain Community and Web-based Training. Formed in February 2012, the company is focused on helping technology providers and users of technologies improve value in their supply chain practices.

About Abby Mayer

Abby Mayer (twitter ID @indexgirl), Research Associate, is one of the original members of the Supply Chain Insights LLC team. She is also the author of the newly-founded blog, Supply Chain Index. Her supply chain interests include connecting financial performance and supply chain excellence as well as talent management issues, emerging markets, and improving risk management practices through the use of big data and analytical analysis.

Abby has a B.A. in International Politics and Economics from Middlebury College and a M.S. in International Supply Chain Management from Plymouth University in the United Kingdom. She has also completed a thru-hike of Vermont’s 280 mile Long Trail, the oldest long distance hiking trail in the United States. As part of the planning and food prep process, she became interested in supply chain management when she was asked to predict hunger pangs for the entire three-week trip before departure. If that isn't advanced demand planning, what is?!?!