

## The Business of Healthcare:

# Optimizing your supply chain

### Executive Summary

## Leading with agility

For healthcare providers today, the challenges are too tough to rely on tradition. The time has come for new thinking—a fresh and agile approach to the future. Patients are the heart of this new healthcare world. What can America's healthcare executives do to make their experience and outcomes better? How can clinicians and patients come closer together, so that clinicians can spend more time where they belong, at the patient's bedside? How can healthcare providers improve the quality of care and lower costs at the same time?

To meet these new mandates, healthcare executives are leading by a new set of rules. Where once we worked in silos—and sometimes even at odds—the time has come for providers, suppliers, group purchasing organizations and distributors to work more closely together than ever before. At stake is the very health of the health system itself:

- **To manage change**, we must seek inspiration to meet challenges never seen before.
- **To work faster**, we must develop better ways to achieve critical goals, without sacrificing quality.
- **To be efficient**, we must take the responsibility to continually improve every process.
- **To collaborate**, we must have a genuine commitment to work together with select partners.
- **To innovate**, we must develop new ideas that spark savings and efficiency.
- **To adapt**, we must understand that healthcare today moves faster than ever before—and that the leaders will not only react to change, but anticipate it and be ready for new solutions.

### What's inside

- Creating a world class supply chain
- Lowering costs, improving quality
- Going lean to improve processes
- Using data to make better decisions faster
- Managing change in a new healthcare world

### Optimize successfully

The purpose of this series is to help America's healthcare executives better prepare to succeed both now and in the future. The direction of healthcare may be uncertain, but your next steps don't have to be. Now more than ever, it is essential that healthcare executives focus on **The Business of Healthcare**.

## Manage Change

### The new world of healthcare

The major trend in healthcare today is to create a better patient experience at the best possible cost. In fact, CEOs everywhere are seeking to take costs out of their health systems, without impacting safety or quality. The hospital supply chain is gaining more momentum with healthcare executives than ever before as a significant source of cost savings. And for good reason:

*Supply costs (which include not only the product itself, but also the labor cost of handling it), represent about 25 – 35 percent of a typical hospital's total costs.*

*'Enabling Long Term Value Added Partnership in the Healthcare Industry,' Jorge Oliviera, June 2005.*

*Better supply cost management is the greatest source of new capital available to hospitals today.*

*'World Class Supply Chain Effectiveness,' Jonathan Byrnes, DBA, MIT, HFMA, August 2008.*

*5 – 15 percent savings in supply chain costs equates to a 1 – 3 percent improvement in operating margin.*

*'Enabling Long Term Value Added Partnership in the Healthcare Industry,' Jorge Oliviera, June 2005.*

In short, an optimized supply chain is essential for managing total costs in the new world of healthcare. But 'optimization' is often misunderstood: It's about more than simply driving down the price of medical-surgical products and pharmaceuticals. Today, there's only so much margin left in product costs. So where will all the supply chain savings come from?

Product savings isn't the answer alone, and the executives of many leading hospitals and health systems recognize this. That's why they seek vendors who can move beyond product cost benchmarking and into the *total cost of care*. But many other providers still focus on product costs alone. They may have granular goals for reducing product costs, but no goals for where the truly untapped savings are: in supply chain *processes*.

"Many providers are down into the weeds around product and miles away from process," according to Steve Inacker, President of Channel Management—Medical Segment for Cardinal Health. "For every dime of product savings, there's a dollar of process savings. Stop a process inefficiency and the savings are forever."

So how can providers move beyond legacy thinking—from a product to a process focus? It starts with supply chain *intelligence*.

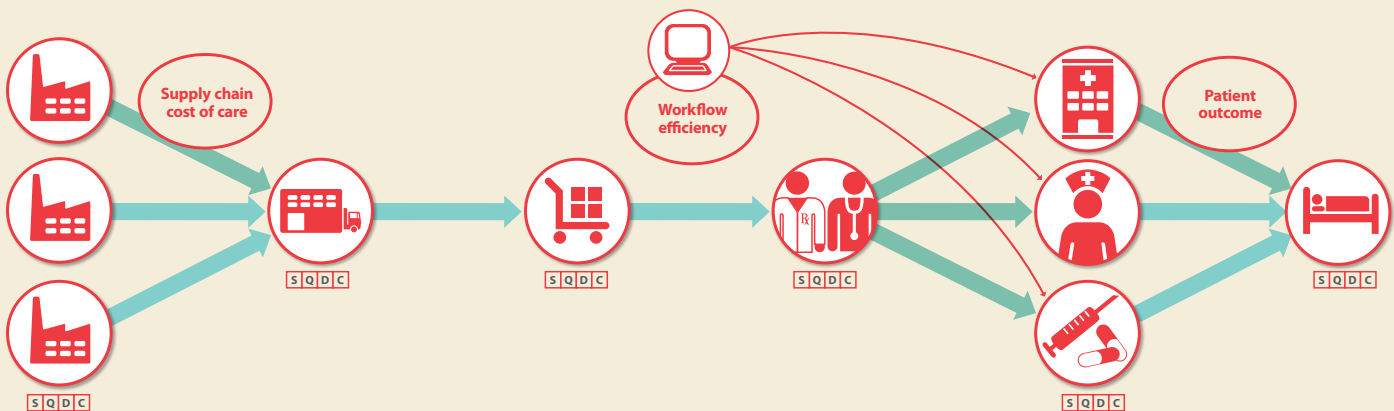
#### Creating a world class supply chain:

##### *The driving forces*

- Increasing supply chain costs
- Concern over clinician satisfaction
- The need for more efficiency
- Tighter control and visibility of product pipeline
- Greater focus on quality patient care
- Borrowing best practices from other industries
- Growing trend of vendor-managed inventory

### The path to improving care

When everyone focuses on improving the four critical components of the value stream—safety, quality, delivery and cost—providers can deliver better patient outcomes.



## Work Faster

### Seeing your supply chain

How can you make better decisions faster to optimize your supply chain? It starts by understanding how your supply chain truly works from end to end. Only then can you identify opportunities for optimizing it. Put another way, it's understanding the value stream, from patient to manufacturer. Recognizing where this value is added and lost across the value stream is a starting point for determining where to focus, according to Andy Keller, Vice President of Inventory Management for Cardinal Health.

To understand and improve your supply chain's value stream, use a Lean Six Sigma (LSS) approach. And that begins by having a clear understanding of what LSS truly is. "There are all kinds of definitions of lean, but it's really nothing more complicated than engaging and empowering employees to improve the business by eliminating waste and non-value-added activity," said Rob Pantano, Senior Vice President of Warehouse and Operations—Pharmaceutical for Cardinal Health. "For example, it's reducing 22 steps to 6 and increasing speed while reducing cycle time."

'Lean Six Sigma' is actually two different concepts: 'Lean' refers to process improvement, while 'Six Sigma' reduces process variation in such areas as time, accuracy, fill rate and so on. From a healthcare provider's perspective, they're the critical benchmarks for evaluating the supply chain:

- Was the product shipped on time?
- Was the shipment accurate?
- What was the fill rate?

Typically, a provider may spend a year or two implementing a lean process, and then begin to identify and correct non-value-added variations in that process. The result is dramatic, creating "end-to-end visibility and transparency," said William Owad, Senior Vice President of Operational Excellence for Cardinal Health. And that leads to "the flexibility and adaptability to transform how products move through the supply chain."

*"End-to-end visibility and transparency (lead to) the flexibility and adaptability to transform how products move through the supply chain."*

**William Owad**  
Senior Vice President of Operational Excellence, Cardinal Health

### Going lean

Above all, "Lean Six Sigma is a culture of continuous improvement," Pantano said. And it seeks to solve such cultural issues as low employee engagement and low customer satisfaction. "You have to start with the intent and the commitment to build the capability. Then, collaborate with someone who can provide the expertise on a full or part-time basis. Internally, put together a dedicated group of resources to lead your organization down this journey. And have patience: It's a long journey. Stay with it and be committed to believe that it will truly work. Lean Six Sigma has to be part of your culture. It's not going to happen in a year—it takes many years," he said.

Once the commitment is in place, what's the best way to proceed? According to Inacker, start by evaluating each touch point, from the final point of consumption to the ordering process and all the way back to the dock. (Working with distributors and manufacturers, you can continue this evaluation all the way to the product's point of origin). As you evaluate these touch points, ask yourself, 'What does the full replenishment cycle really look like?' For many providers, this is the first time the entire process becomes truly transparent.

Throughout the LSS evaluation, the aim is to identify and eliminate non-value-added touch points. Typically, most healthcare providers find that there are two to three times more touch points than are truly needed. "Draw big, red boxes around those you can eliminate," Inacker said. By eliminating waste, redundancy and non-value-added touch points, you will reduce your total supply chain cost, while increasing staff productivity. (Truly, the goal of optimization.)

"Regardless of the size of the organization, lean always applies," said Michael Hurley, Director of Conceptual Design for Cardinal Health. "There's always a process to improve, both within the hospital and between the hospital and non-acute sites of care. This is not just evolution—this is optimization. You shouldn't continue doing things a certain way, just because that's the way you've always done them. How *should* the process be designed, to optimize it?" Above all, the focus is not just on moving boxes, but also on helping providers achieve successful outcomes.

According to Inacker, the way to start a Lean Six Sigma program can be summed up in one simple word: *small*. Identify your internal champion, develop a pilot, measure your results and see first-hand the impact a LSS approach can have on optimizing your supply chain. Then, roll out the concept across your entire operation. Ideally, you should strive to have C-suite buy-in from the very beginning—including the CEO, CFO and COO of your organization. But to drive the vision daily, you also need the commitment of the executive responsible for the supply chain. Often, that person is the vice president or director of supply chain or operations.

## Spotlight on Success:

### Going Lean at BJC HealthCare

For many years, the supply chain technicians at BJC HealthCare in St. Louis, Missouri set par levels based on historical experience and gut feeling, vs. actual data. This approach drove up line fees and created overstock situations. “We had to get rid of cost,” said Nancy LeMaster, Vice President of Supply Chain. “The goal was to eliminate waste, not people. We had to find ways to be more efficient and effective.”

Within BJC’s 13 hospitals there are hundreds of areas where medical supplies are stored and multiple ways they are managed. BJC and Cardinal Health collaborated on two Kaizen events to analyze and rebuild the ordering and inventory management process for several supply areas. The results were dramatic:

*A 25 percent average reduction in lines ordered for targeted areas.*

*\$200,000 estimated annual savings.*

*Greater nurse satisfaction, because products are easier to locate in the storerooms.*

*Lower labor costs, because the daily handling of products was eliminated.*

How did the BJC-Cardinal Health team do it? The first step was to standardize the storerooms, reorganizing products into bins based on five, color-coded categories. High-volume items were placed ergonomically and new signage was created for nurses to locate products faster and easier.

Then, the team developed a formula to set realistic par levels and reorder points based on actual usage data—not gut feeling. Products were also identified by their velocity: fast-moving, medium or slow. A visual cue of a dot with a number was placed on the bin or item. The dot color indicated velocity, while the number represented the quantity that would trigger a reorder.

“Lean is very practical. Employees can relate to it without a lot of training,” LeMaster said. “And any health system can do it. Identify your problem areas and then go lean. Make it simple—use visual cues. If you can’t afford color-coded bins, use colored tape. Show nurses how you’re helping to make things better for them.”

BJC continues to expand its use of lean. Next, the health system plans to apply lean principles to managing high-dollar items delivered direct from the manufacturer. “Lean isn’t a program—it’s a methodology,” LeMaster said. “It doesn’t need to be ‘completed.’ Lean is about how you work, not creating more work. It’s very approachable.”

## Work Faster *cont.*

Also critical is the collaboration of key trading partners to improve processes and reduce variation across the entire supply chain, from manufacturer to bedside and every point in between. “How do the payor, GPO and provider interact?” asked Ken Robinette, Vice President-Sales, who focuses on lean practices for the pharmaceutical business of Cardinal Health. “How do we take what we understand about how materials flow through a particular supply chain to make information flow easier? The distributor sits in the middle of this flow and ideally helps each partner do what it does best.”

It’s also vital to understand that lean is not a one-size-fits-all approach. It’s important to segment providers to meet their specific needs. For example, does the value stream of a hospital pharmacy look the same as a retail chain pharmacy or independent? Variables between the two may include cash flow challenges, capacity constraints, business processes, service quality and more. From a distributor’s standpoint, it’s about looking at things through the customer’s eyes and leveraging core capabilities to help them.

Once your LSS efforts begin, use data analytics to measure ongoing results. Part of cultural transformation is to keep everyone accountable for progress and sustaining results. Manage performance by creating MBO (Management by Objective) scorecards for every site. For example, Cardinal Health distribution centers use takt boards to measure quality and cycle time. These visual boards allow employees to see by the hour how they’re doing. They do huddles each day based on how they performed the night before.

### **Nuclear pharmacy: location saves lives**

Being efficient is about more than saving money alone. Sometimes, it’s literally about saving lives. And there’s no better example than the distribution of radiopharmaceuticals. Safe and reliable delivery of daily doses is essential to patient care. Given the high perishability of radiopharmaceuticals, distribution centers need to be as close to the sites of care as possible. That’s why Cardinal Health maintains the largest radiopharmaceutical network in America, with more than 150 nuclear pharmacies dispensing over 12 million unit doses annually.

### **Next steps**

**In short, Lean Six Sigma is a proven way to evaluate your supply chain and eliminate non-value-adds, improve processes and reduce variability. Many hospital and integrated delivery network (IDN) executives recognize the value of deploying LSS practices, but lack the in-house resources and/or expertise to move ahead. For these executives, outsourcing to select vendors with proven LSS expertise is a viable option.**

## Be Efficient

### Controlling costs

Healthcare providers shouldn't optimize their supply chains without managing costs first, according to Tony Vahedian, Senior Vice President and General Manager, Medical Channel Services and Solutions for Cardinal Health. "You can't manage cost until you look at *total* cost—from the sourcing country to the ultimate point of use." The holistic view is the *realistic* view, and healthcare providers can't manage total cost without having a cost control strategy: "Trying to reduce costs without a control strategy is almost impossible," he said.

Your cost control strategy should include two parts: 1) what you do yourself and 2) what you outsource to select vendors, such as distributors and GPOs. How should you decide what to handle in-house and what to outsource to others? According to Vahedian, weigh each decision based on the following:

*Continued on page 6*

*"Improving the performance of the healthcare supply chain will be a core element of reducing the cost of healthcare in the U.S. But it should go without saying that the job of reducing healthcare's value chain costs is bigger than any one company. We must all break through the industry's siloed thinking, challenge old paradigms and push ourselves to find solutions for the industry's issues. This is our opportunity. It can be done—and it's a job that cannot wait much longer."*

**Michael Duffy**

Executive Vice President, Global Manufacturing and Supply Chain, Cardinal Health

## Spotlight on Success:

### Optimizing with LUM at Memorial Hermann

#### Traditional supply chain:



#### ValueLink® Services efficient supply chain:



For Memorial Hermann Healthcare System in Houston, Texas, the supply chain is a continuous target for reducing costs and offsetting declining reimbursement rates. "I wake up every morning with one job only: to take cost out of the healthcare system," said Dan Humphrey, System Executive for Supply Chain Services. "We're trying to maximize every single opportunity" to lower costs and improve quality at the same time. Cardinal Health is helping Memorial Hermann do just that via ValueLink® Supply Management Services. This LUM solution for medical-surgical products bypasses the non-value-added points in the supply chain that not only drive up costs, but also the potential for administrative errors. (Not to mention, delays in patient care.) The LUM system puts products directly where they need to be: in the hands of clinicians at the point of care.

The LUM system is at the very heart of Memorial Hermann's fully optimized supply chain. It receives orders electronically—and then streamlines their delivery by eliminating the multiple handling of products, including packing, unpacking and delivery. At Memorial Hermann, Cardinal Health is seen as an internal consultant, according to Perry Flowers, System Executive for Patient Care Support and System Pharmacy. "There's a professional solutions concept with Cardinal Health that is absent in other distributors. Just one example is how we can now receive more supplies with fewer deliveries, which saves us time, energy and money."

## Be Efficient *cont.*

### Sourcing Strategy:

What are your policies for purchasing products domestically vs. overseas suppliers?

#### Outsourced Distribution: The first 3 steps



1. Establish a logical-unit-of measure (LUM) and just-in-time (JIT) distribution platform to stabilize product flow to the storeroom and open up visibility to par locations.
2. At par locations, optimize the replenishment logic and routing, resulting in improved product availability and materials staffing efficiencies.
3. Use effective data management systems to maintain real-time visibility of product flow. The better the data, the faster the first two steps will improve.

**External Supply Chain:** This is from the supplier to your warehouse.

There are two approaches:

**1. Outsourced Distribution:** This is ideal if you want to leverage the financial and operational resources and expertise of select vendors—for example, distributors, GPOs and regional purchasing coalitions (which offer local buying opportunities that may not be available through national GPOs). Today, your outsourced distribution solution can include such advanced strategies as product standardization, utilization, par optimization, low-unit-of-measure (LUM) and just-in-time (JIT) delivery. When these advanced strategies are combined into a single, powerful strategy, the result is better utilization and lower costs.

One aim of LUM and JIT delivery is to have the right balance of inventory across all points of care, according to Hurley. Additional aims include labor efficiency and streamlined internal hospital logistics processes. LUM and JIT are a powerful combination that optimizes inventory levels and reduces costs, while improving efficiency, staff productivity and ultimately, the quality of patient care. Standardizing product mix and setting par levels based on data analytics also drives efficiency and savings, while minimizing waste and stockouts. Monitoring utilization helps ensure compliance, as well as continually identifying opportunities for new improvement. Overall, this distribution model releases clinicians from the burden of supply chain management, so they can redirect more of their time to what matters most: taking care of patients.

According to Vahedian, “Every hospital has to decide if it wants to totally outsource its LUM program or do some part of it in-house. For example, a distributor can deliver to the dock, and the hospital can get the products to the floors, if it has the space and staff to do it. Or, the hospital can choose a vendor-managed inventory program, in which the vendor delivers all the way to the point of care.”

**2. Self-Distribution:** This option isn’t for everyone. But it has the potential to be viable for hospitals that have the balance sheet for owning inventory and the risk tolerance for uncertainty, such as product recalls and emergency recovery due to power outages, natural disasters and other unforeseen events.

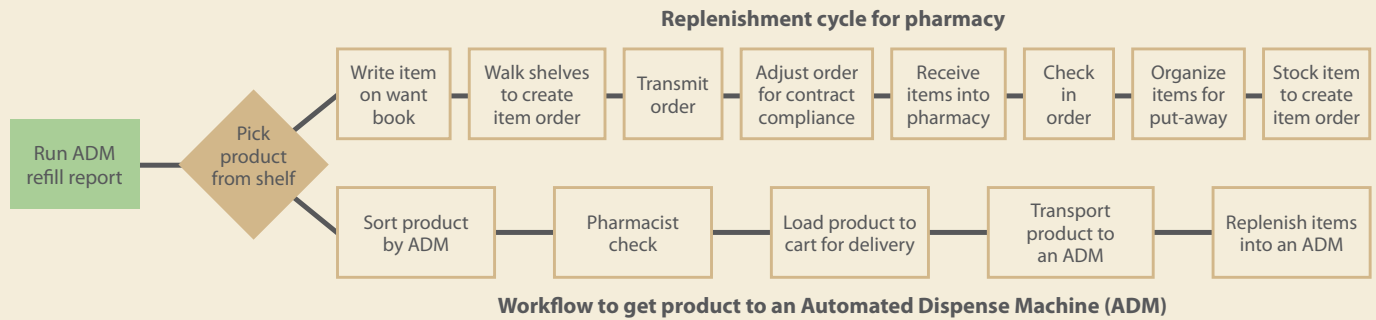
One other component of your external supply chain to consider is the direct-ship relationships you have with manufacturers. While a distributor may not have the data visibility to help you manage the product prices themselves, you may be able to lower your *total* costs by reducing shipping expenses via managed freight solutions. Cardinal Health offers OptiFreight® Logistics to help healthcare providers lower the shipping portion of their total costs. With this program, providers can reduce freight costs by 30 – 50 percent.

**Internal Supply Chain:** This is from the dock to the hospital and within the hospital’s ‘four walls’. According to Vahedian, supply chain orchestration is the key: How does the product get where it needs to be when it needs to be there—most efficiently and at the best possible cost? In particular:

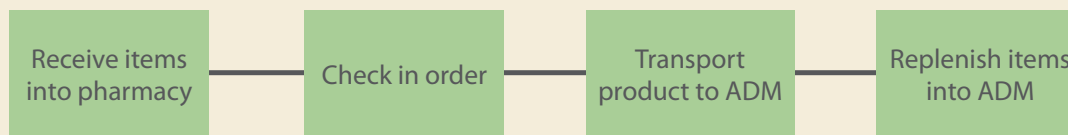
- Where’s the patient?
- How is the workflow structured?
- What is the capital equipment readiness? (e.g., *bed cleaned, ready to be occupied*)

## Spotlight on Success: Automating drug replenishment at Covenant Health System

### Logistics **without** CardinalASSIST® automated replenishment



### Logistics **with** CardinalASSIST® automated replenishment



The largest healthcare institution in the West Texas and Eastern New Mexico region, Covenant Health System was an early adopter of CardinalASSIST®, an automated logistical process that replenishes drugs for ADC (automated dispensing cabinet) distribution. The system redesigns the medication distribution process that improves efficiency and patient safety, while containing costs.

It does so by combining two critical functions: 1) automating processes and 2) perhaps most importantly, providing custom reporting, which yields the transparency and insights to continually improve Covenant's efforts to decentralize pharmacy distribution.

CardinalASSIST® not only frees up pharmacy labor, but also leads to fewer errors, because there are fewer steps. What once required several Covenant staff members to work many hours can now be accomplished faster and at a lower labor cost. In fact, CardinalASSIST® has reduced the annual, financial impact of ADC replenishment by more than one-third, dramatically improving the vend-to-refill ratio.

At the same time, CardinalASSIST® and other Cardinal Health strategic initiatives have supported Covenant's efforts to redefine the role of the hospital pharmacy itself. "Our goal is nothing less than recapturing the clinical value of the pharmacist," said Ron Scott, Assistant Vice President, Clinical Supply Chain for St. Joseph Health System, the parent of Covenant. "The pharmacy has been underutilized for far too long... we're changing the perspective of those who once said, 'I thought you just counted pills.'"

*"Automated drug replenishment not only saves labor, but also improves patient safety. In fact, these systems are designed to increase the accuracy of barcode scans at the point of use, which results in fewer PADEs." (Patient Adverse Drug Events)*

**Jon Giacomini**  
President, U.S. Pharmaceutical Distribution, Cardinal Health

## Be Efficient *cont.*

### Managing drug cost inflation

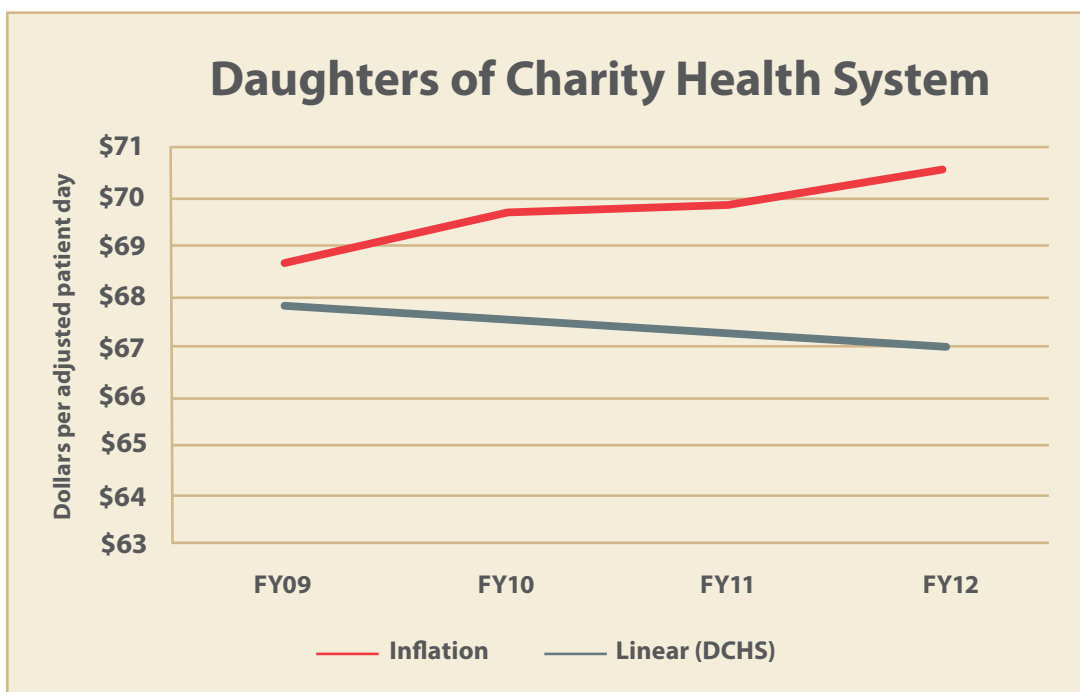
#### A critical cost control strategy for pharmacies

Mitigating the rising cost of drugs is a key focus for every pharmacy, from health system pharmacies to the major chains. Why do drug costs continue to rise year after year? It's more than just regular price increases alone, according to Kathy Chase, Director of Clinical Operations for Cardinal Health Pharmacy Solutions. As new drug technologies become available, the new drugs are significantly more expensive—costing two to 10 times more than their predecessors.

"The challenge is to slow the rate of cost increase," Chase said. "We have to continually think of new ways to stay ahead of the pressure of rising cost." One strategy is to address both distribution and utilization at the same time. "We use what we call a 'one-pharmacy' approach," Chase explained. "The first challenge is to get the drugs to the hospital in the most efficient way possible. Once in the door, the drugs need to be used in the most cost-effective and safest way possible." It's a powerful combination that yields significant cost savings for Daughters of Charity Health System (DCHS) in California.

#### Using generics to lower drug costs

Another vital cost control strategy is to identify new generics that are coming on the market and evaluate the opportunity to switch and save money, without impacting quality. For example, DCHS was paying \$180,000 a year for an antipsychotic drug. Cardinal Health identified a generic substitution that lowered the annual cost to just \$18,000. "Generics are a proven way to lower medication costs," said Jon Giacomini, President of U.S. Pharmaceutical Distribution at Cardinal Health. "The key for providers is to have a reliable source of information about new generics coming to market, so they can be considered for their clinical efficacy and cost savings."



**Beating Inflation:** While inflation continues to drive drug prices up, Cardinal Health is helping DCHS drive them down—well below the rate of inflation. And the gap has widened year after year.



## Collaborate

### More than a vendor

To truly optimize the supply chain, healthcare providers need to understand where value is being added or lost at every touch point. As we've already seen, Lean Six Sigma and value stream mapping create the visibility necessary to understand these touch points. Next, it's critical to understand who is best qualified to manage each touch point, and that's where close collaboration is essential to supply chain optimization.

"Supply chain management may not be a core competency for many providers," Keller said. "If there's a better way to handle a process, then the provider should collaborate with an expert who can manage it." The key is for a provider to understand what their foundational capabilities are and then seek out trading partners who are experts at filling in the gaps.

*"Teamwork is the key to success in the new world of healthcare."*

**Mark Rosenbaum**  
Chief Customer Officer, Cardinal Health

At the heart of these foundational capabilities are two major elements: transparency and communication. Even more important is *connecting* these capabilities, so that transparency informs communication. Understand what your medical-surgical product and pharmaceutical needs are, based on real-world data that reveal volume needs. Then have clear, open communication among all trading partners to help ensure that those volume needs are met. For example, it's essential that accurate communication of product consumption makes it to manufacturers, to ensure that they're making sufficient quantities and minimizing the risk of supply disruption. A common challenge that can create supply issues is the bullwhip effect, where a small change in consumption leads to a significant change by the time the information is received by the manufacturer.

Having the right processes in place to handle the inevitable changes in demand that are both predictable (such as seasonality) and unpredictable (drug shortages and disaster recovery, for example) are critical to and ensuring consistent supply. Examples include leveraging advanced analytics to help predict changes based on historical patterns and enhancing network agility to improve responsiveness to unplanned changes in demand. However, enhancing communications of known events remain an opportunity: "If a provider picks up a new contract or adds a new wing to their facility, are the processes in place to ensure that every trading partner knows and can prepare for the change?" Keller said.

*\*Manufacturer, GPO, distributor and provider.*

In short, close collaboration breaks down barriers, opens communication and ultimately, minimizes waste and non-value-added costs. Focus on actively managing performance across all vendors, internally and externally. Establish a formal, collaboration process for your internal supply chain teams—and link that process to your external vendors, such as distributors, group purchasing organizations (GPOs) and manufacturers/suppliers. This collaboration should include clear and transparent performance requirements and metrics—from your internal leadership to the teams managing operations daily.

Above all, establish and embrace new standards for collaboration across the entire supply chain. For example:

**EDI:** Electronic Data Interchange, to streamline and speed up workflow efficiency. EDI is a commonly-established business practice across many industries. Put simply, it's the electronic transmission of data between the computer systems of trading partners, without the need for human intervention.

**CSOS:** Controlled Substance Ordering System, for faster and more accurate orders at a decreased cost. CSOS enables providers to electronically order and maintain records for schedule II controlled substances, without the need for DEA Form 222.

#### **GS1: the language of collaboration**

You have one Social Security Number; one number for your phone; a single license plate number for your car. So why would you have as many as *four different\** identification numbers for the products you buy? That's precisely the problem that healthcare supply chain managers face today. Now imagine the challenge if you multiply those four numbers by the hundreds of thousands of products you buy each year. Keeping track of all that data is a recipe for error, which leads to inefficiency and missed opportunities to cut costs.

*"We simply cannot be satisfied until we improve the availability of products at the point of use, while reducing end-to-end system costs."*

**Michael Duffy**  
Executive Vice President, Global Manufacturing and Supply Chain,  
Cardinal Health

## Collaborate cont.

To address the data standards challenge, leading health systems are adopting the same GS1 product identification system that other industries use around the world. The GS1 system includes:

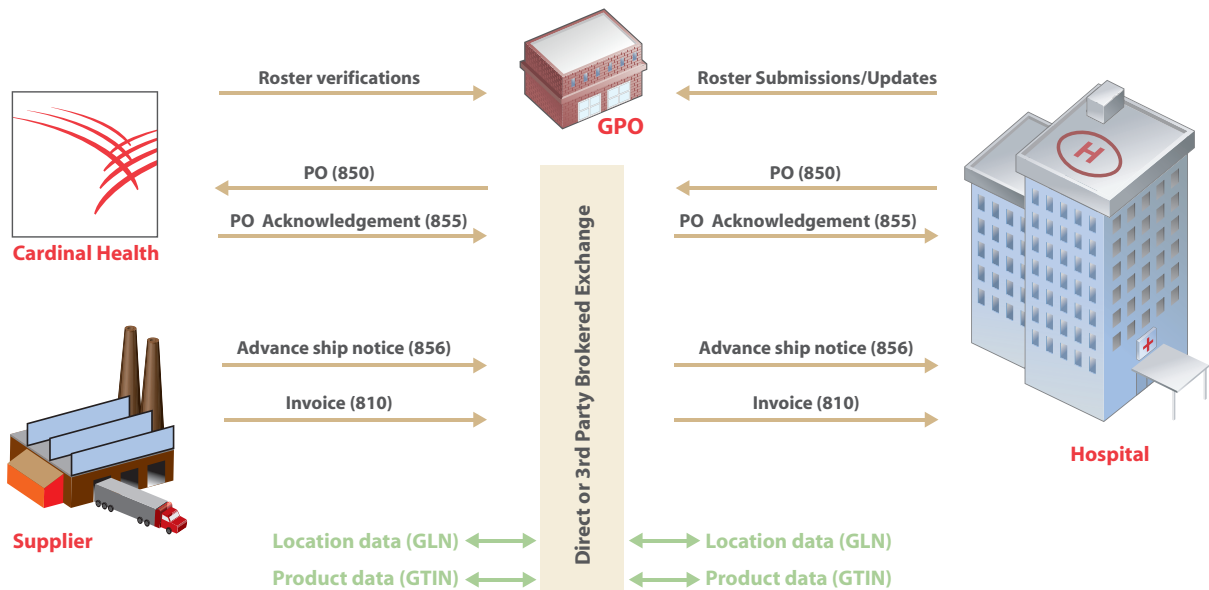
- Common location (GLN – Global Location Number)
- Individual product numbers (GTIN – Global Trade Item Number)
- The data synchronization network that connects it all (GS1 GDSN® – Global Data Synchronization Network)

A ‘Rosetta Stone’ for the healthcare supply chain. Adopting GS1 enhances supply chain visibility, drives opportunities for cost savings and improves patient safety.

While GLN provides the foundation for data normalization, GTIN is much more granular, giving providers new transparency and insight into every product, from the moment of purchase to its use at the point of care—wherever that is in the care delivery network. For example, the GTIN can reveal the product’s unit of measure and which patient is connected to the product’s use.

The GTIN is even useful for managing product recalls, which is a growing challenge for providers everywhere. The GTIN not only reveals where a product is, but also when and where it was purchased (critical information to determine if a particular product is affected by the recall notice).

“Consumer packaged goods companies have moved to a common GS1 framework,” said John Abrams, Vice President, Application Design and Development, EIT Solutions, for Cardinal Health. “It is the language of the supply chain. The healthcare industry as a whole has not adopted GS1 yet, but we’re working with advanced providers who have.” For those IDNs that have not yet committed to GS1, they can be comfortable that others have done this already. New adopters would not be setting a precedent for IDNs.



## A culture of change

“Most people look at lean as a family of tools for improvement,” said Dale Lucht, a Shingo examiner and director of lean and management engineering at Lehigh Valley Health Network (LVHN) in Allentown, Pennsylvania. “The model stresses that, but it also stresses that tools need to be part of a system, and the tools need to be principal- or behaviorally driven—you have to have that cultural transformation as well ... using the tools will get you to a certain level, but unless you have a

system and behavioral transformation, you are not going to achieve the full benefit of lean.”

Lehigh Valley Health Network and BJC HealthCare are members of the Healthcare Value Network (HVN), an organization focused on applying lean principles to health systems. “We belong to HVN to share learnings,” LeMaster explained. For more information about HVN, visit [www.healthcarevalueleaders.org](http://www.healthcarevalueleaders.org).

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## Innovate

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### Thinking in new ways

When it comes to supply chain innovation, “the pioneer is healthcare,” according to Dr. Jonathan Byrnes, Senior Lecturer at MIT. “All of the major innovations have happened in healthcare,” he said—such as vendor-managed inventory, cross docking, core/non-core inventory systems and channel mapping/cash generation (“big, internal profitability systems” which lower costs 40 – 50 percent, Byrnes noted).

So if healthcare was the pioneer for so many milestones in supply chain evolution, why has the industry lagged behind others in seeing dramatic results? According to Byrnes, the answer is two-fold: “Until now, there has been very little pressure for healthcare to transform; the way healthcare costs are eating into the nation’s GDP is unsustainable. There’s a tsunami in the industry now. Plus, the healthcare industry is massively fragmented. The issue is *implementation*. Even strong health systems can’t sit smugly.”

To address the challenge, health systems are turning to advanced distribution strategies to reduce on-hand inventory levels and holding costs, without impacting quality of care. As we’ve already seen, these strategies include standardization, utilization, par optimization, low-unit-of-measure (LUM) and just-in-time (JIT) distribution.

How healthcare providers implement these strategies depends in large part on each provider’s business strategy and available resources. Providers can outsource distribution to the dock—or all the way to the bedside. Indeed, the future may lead to a totally outsourced solution as the standard: “In clinical medicine, best practices bubble up to ultimately become what is known as ‘standards of care,’” Byrnes said. “I believe... looking to a company that can partner from dock to patient bedside will ultimately be seen as the standard of care in hospital supply chain management. You either do it now or later, but soon enough everyone will need to do this to stay competitive.”

#### The case for standardization

It’s an ideal strategy for reducing product spend and supply chain complexity *simultaneously*. The time to address both has never been more critical. Said the CEO of one large hospital chain: “Efficiency has not been the hallmark of healthcare delivery operations... we need savings now more than ever.” Another CEO of a large hospital chain sees standardization as one strategy for combatting rising costs: “We used to have 20 gloves... now we’re looking to have two.”

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## Spotlight on Success:

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### GS1 at Mayo Clinic

“GS1 is a no-brainer; why wouldn’t you do it?” said Joe Dudas, Vice Chair, Supply Chain Category Management for Mayo Clinic. “Without data standards, how can you turn data into information?”

According to a jointly-published white paper in 2010, “Mayo Clinic and Cardinal Health are among the first organizations in healthcare to implement GLN standards in supply chain transactions... Standards adoption is now considered a requirement for effectively controlling both cost and quality in healthcare going forward... Industry groups like the Association for Healthcare Resource & Materials Management (AHRMM), Health Industry Group Purchasing Association (HIGPA), Healthcare Supply Chain Standards Coalition (HSCSC) and Strategic Marketplace Initiative (SMI), as well as various integrated delivery networks (IDNs), group purchasing organizations (GPOs) and suppliers have all endorsed GS1 standards... Industry-wide implementation of data standards such as the GS1 System can improve supply chain integrity.”

Mayo Clinic’s top 25 suppliers are adopting GLN. “This is now the norm, and account numbers are the exception,” Dudas said. The first GTIN implementation is also underway: “We’re doing one category at a time, starting with the most complex, volume-heavy ones,” Dudas said.

The Mayo Clinic/Cardinal Health white paper reveals the benefits of GLN: “Price accuracy improves with location identification accuracy. Location identification errors can cause loss of discount eligibility, as well as tier qualification and rebate disputes... price accuracy is currently 99.5 percent. All other suppliers average 95 percent accuracy. Superior price accuracy is attributed to not only GLN, but also to the commitment that both organizations make to price integrity and associated improvement efforts.”

*“GS1 is a no-brainer; why wouldn’t you do it? Without data standards, how can you turn data into information?”*

**Joe Dudas,**  
Vice Chair, Supply Chain Category Management  
Mayo Clinic

## Innovate *cont.*

### **Six keys to successful standardization:**

- 1** Analyze your current product mix for redundancy and waste.
- 2** Seek cost-effective, clinically-equivalent alternatives, which will lower both your spend and line count.
- 3** Look for 'early win' opportunities such as standardizing commodity items, which will set the stage for doing the same with clinical preference items.
- 4** Use data analytics to provide the rationale for converting products to equivalent quality at a lower cost. (With data analytics as the foundation, value analysis demonstrates the advantages of standardization.)
- 5** Seek opportunities to remain GPO compliant as you standardize.
- 6** Evaluate the use of GS1 data standards to simplify and integrate product location and identification information among all trading partners.

### **Standardizing in the OR**

As one of the highest cost areas of a hospital, the OR can benefit significantly from medical-surgical product standardization. Each year, more than 381 million kits are used to treat patients.<sup>1</sup> The reason is as simple as it is compelling: Standardization improves quality of care and patient safety, while lowering the total cost of procedures at the same time.

High quality, cost-effective, regulatory-compliant components come together into a simple package customized by procedure. There's no cost wasted on unnecessary or sub-quality kit components, and labor efficiency is improved. Instead, clinicians have more time to focus on patients, perform more procedures and improve overall processes for better care and satisfaction. No wonder kits are a mainstay in the Acute and Surgery Center Operating Rooms.

"The surgical suite is the central nerve center of the hospital," said Mike Berg, Senior Vice President and General Manager for Presource®, the Cardinal Health kitting solution. "There's no better opportunity to improve cost and quality of care."

### *The value of kitting:*

- Increase efficiency and decrease costs via practice and process changes
- Drive product consolidation and standardization
- Procedure packs — standard and customized
- Improve patient outcomes and quality of care
- Optimize storage space and inventory investment to improve cash flow

Yet, the kit is only part of the answer: Typically it's only 10 to 15 percent of the total surgical cost. From pre-op to the surgical event to post-op, what are all of the products tied to the procedure—not just the kit itself? What is the cost of recovery, length of stay, adverse events, hospital-acquired infections and retained foreign objects? More than the cost of a medical-surgical kit, this is about the total cost of care. We have clinicians and solutions that will help improve both quality and cost effectiveness. Customers are asking us to play a larger role to simplify their supply chains. That means evaluating components offered, driving standardization, reducing variation and examining and collaborating to reduce the total cost of care.

That includes some of the highest-dollar products: physician preference items (PPIs). According to Berg, "More providers are asking us to help them manage procurement from these suppliers. There's a lot of inconsistency in cost and quality, so we're collaborating with our trading partners to manage the variability. The goal is to look beyond product price alone and into the total supply chain to evaluate all costs incurred. Our kit packaging solutions help drive labor efficiency, product standardization, and improved patient care. That's a winning formula as we work with our customers."

## Managing drug shortages

In addition to containing rising costs, drug shortages are a chief concern for pharmacy executives. And unlike cost inflation, drug shortages are unpredictable. “These are things you can’t project,” said Richard Hutsell, Chief Information Officer for Daughters of Charity Health System (DCHS).

“When there are shortages, we need really clear communication to the hospitals,” said Jerry Boden, Senior Director of Pharmacy and Laboratory Services for St. Francis Medical Center, a member of the DCHS system. Some of the proactive steps that pharmacy executives can take (either independently or working with select vendors):

- Have an ongoing dialogue with manufacturers to get product availability information as soon as it’s available.
- Develop scorecards to measure the quality of communication among all trading partners.
- Conduct regular reviews with trading partners to identify and close gaps in communications.
- Use a dynamic allocation system to obtain drugs based on past buying behaviors.
- Manage an inventory of alternatives in anticipation of demand shifts.

*“Setting up with a pack has decreased turnover times 5 – 10 minutes versus the 10 – 15 minutes it was taking previously. When you add that up, that’s another case or two a surgeon can perform and another patient or two that can get treated.”*

**Dr. Henry Crowley, Medical Director**  
Same Day SurgiClinic of New England

## Data analytics

### The key to making better decisions faster

There’s more to the distribution industry than moving boxes alone. This is about moving *information* as well: “How do we take all this data and turn it into meaningful intelligence for us and our customers?” said William Owad, Senior Vice President of Operational Excellence for Cardinal Health. According to Owad, technology is the key. “It’s the Global Availability to Promise: If a customer orders X today, we use advanced data warehouse capabilities to determine whether the product is available now. If not, then when will it be?” This is about improving the precision of arrival—not estimating a date, but providing an accurate one that’s based on real-world data. And it’s about building transparency and confidence, eliminating customer rework and driving supplier accountability. Ultimately, it’s lowering the customer’s cost to serve.

***GS1 is an emerging common language for data analytics—a ‘Rosetta Stone’ for more understanding and effective communication among all trading partners.***

Another emerging data solution is portal technology, which leverages social media and web capabilities. “How do we do things in minutes or seconds that used to take days or weeks?” Owad said. For example, in the past suppliers would use a paper-based process to change contracts. “With our portal technology, we look for ways for suppliers to update those changes online, so we can get instantaneous access.” The benefit is accurate billing: “With instant access to accurate contract information, we don’t bill incorrectly and have to fix it later. That saves time and money.”

Data connectivity and transparency *across every touch point of patient care* yield new insights into supply chain optimization and lowering *total* costs. And ongoing data reporting improves utilization—the benchmark that ensures your supply chain optimization strategy is working all the way to the point of care.

## Adapt

### Seeing around corners

The ultimate goal is to create one supply chain connecting all sites of care, as the industry continues to consolidate in an effort to lower costs while providing a better patient experience. To support this transformation, healthcare providers are seeking supply chain expertise outside of the industry, where supply chain operations are more mature.

“There is a strong migration of non-healthcare supply chain professionals into healthcare,” Inacker said. These professionals are bringing best practices from other industries to help optimize the healthcare supply chain (such as Lean Six Sigma and GS1 product identification standards).

The consumer packaged goods (CPG) industry has been developing and nurturing supply chain best practices for decades, taking an enterprise-wide, collaborative approach among all trading partners that aligns mutual goals and incentives. This approach creates information transparency and ultimately, builds trust. But to date there has been skepticism that healthcare can adopt the same, collaborative approach. Indeed, a study by the Wharton School concluded that extended enterprises in healthcare were not likely to emerge.

True, there are some fundamental differences between healthcare and the CPG industry, according to Michael Duffy, Executive Vice President, Global Manufacturing and Supply Chain for Cardinal Health. For example:

- The healthcare delivery system is very fragmented and regionalized, with no single player capable of driving industry change as Wal-Mart did in consumer goods.
- Pricing models indexed to inflation have historically not created an incentive for trading partners to collaborate and drive cost out of the system.
- Healthcare lacks the technological sophistication found in other industries.

“Despite those differences, the conclusion that an extended enterprise model is unlikely to emerge in healthcare must be challenged,” Duffy said. “The model is not only possible; it is essential. As supply chain leaders, we must break through silo thinking, challenge old paradigms and push ourselves to find solutions for the industry’s issues. In doing so, we will provide the necessary leadership for transforming our industry and helping restore the global competitiveness of American business.

“Admittedly, there are no easy fixes. But there are lessons we can apply from other industries to create improvements now. These lessons center on building trust and a collaboration mindset, aligning goals and incentives and improving information transparency. Healthcare providers need to know that it can be done ... that the supply chain can improve cost containment and safety,” he said.

It starts by adopting a new perspective: “Providers tend to think of discrete events—point to point—and not holistically. We need to think patient-back to how processes flow, including data, financials and materials. And then, how everyone comes together to help the patient,” Duffy said. Despite the massive fragmentation in healthcare, “there are pockets who understand this perspective. But for now, it’s the exception rather than the rule. We have to reorient the thinking of the provider organization.” And the place to start is to ask two simple, but powerful questions: Is the product where it needs to be, when it needs to be there? And, is the product performing as expected?

Many argue that healthcare is too unlike other industries to make any credible comparison. Indeed, lives depend on clinicians having the right medical-surgical products and pharmaceuticals on hand at all times. But when it comes to supply chain best practices, success in other industries can be a guide for improvement in provider organizations. “In healthcare, our product may be people, but our supply chain process is similar to other industries,” Inacker said.

Recognizing and taking advantage of those similarities—and adopting best practices as appropriate—is the catalyst for supply chain optimization.

### Supply chain best practices

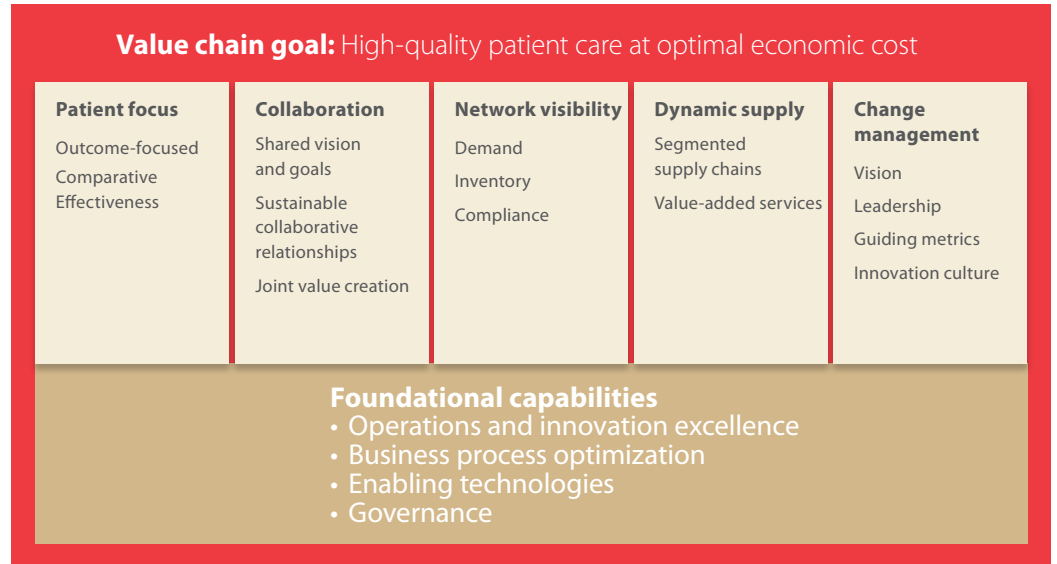
“Distribution is more than just the process of moving a box,” said Michael Hurley, Director of Conceptual Design for Cardinal Health. “It’s a successful outcome of the right thing, at the right time, in the right amount and at the right cost.” Best practices include:

- **Visibility:** Do you know where your inventory is at all times and what’s moving?
- **Utilization:** Are you monitoring actual usage?
- **Analytics:** Do you use real-time data to target and monitor inventory levels?
- **Platform:** Do you have the right supply chain system to best enable optimal inventory balancing to all points of care, and maximize the degree of standardization?
- **Processes:** Are you efficient inside your four walls? What is the cost/benefit analysis of outsourcing some/all of your internal supply chain, from dock to bedside?

**Supply Chain Optimization:**

**The Gartner Model**

Each year, Gartner identifies and recognizes organizations that use their supply chains to improve the patient care experience and provide high-quality care at the optimal cost. This evaluation is driven by the following set of six core capabilities:



Source: Gartner, Inc., *The Healthcare Supply Chain Top 25 for 2011*, Barry Blake, Eric O'Daffer, et al, 30 November 2011 (Figure 1).

**Patient focus:** An “outside-in” focus on patient outcomes and “patient-back” strategies impacts all strategies, from product development to partner collaboration.

This is the least developed of the capabilities, according to Gartner research. To help provider customers make better, outcome-based decisions, manufacturers are working with clinicians to understand how they engage with products.

**Collaboration:** Trading partners must enter into sustainable, collaborative relationships with a shared vision and transparent set of mutual goals to create win-win situations.

Across all segments of the value chain, when organizations are asked, ‘Do you feel there is a lack of trust?’ 95 percent say yes. In the report, *Healthcare Supply Chain Top 25 for 2011*, Gartner states, “For several years, Gartner has advocated the importance of joint value creation as the force that can lead to the adoption of ‘patient-based moments of truth’ and a more cost-effective, quality-driven supply chain.”

**Network visibility:** Trading partners must create bidirectional visibility to key information, such as inventory, demand, compliance and outcomes.

The most straight-forward of the capabilities, this is about understanding clear demand signals and having visibility all the way back to the manufacturer. Healthcare providers typically don’t have this information. Distributors do have it, but the data’s value is often poorly understood. Distributors can play an important role in evolving this capability.

**Dynamic supply:** Because high-quality outcomes aren’t static targets, all organizations must create agile, value-added supply chain responses tailored to multiple customer and channel segments.

The ‘one-size-fits-all’ approach no longer works, because of rapid and ongoing change in the healthcare industry. So organizations are seeking to understand the varying core demand attributes of customers and then developing the appropriate supply chain response. In other words, give customers exactly what they want vs. a diluted response to everyone.

**Change management:** Value in healthcare is a journey, and organizations must have the vision, strategy, execution discipline, and strong governance to sustain change.

This is the hardest and most important capability to develop. To help meet the challenge, organizations are pulling in the perspective of supply chain experts, from both inside and outside the healthcare industry. And they’re raising a fundamental question: ‘What is the definition of service and how do we look at costs?’ Put another way, ‘What service level do we want to provide, and what cost are we willing to pay for it?’

**Foundational excellence:** To drive toward higher-level capabilities, organizations need to optimize their operational excellence and business process harmonization initiatives. Moreover, they need to ensure that their systems are capable of supplying credible data on which to build business cases for the development of higher-level capabilities.

The first five capabilities of the Gartner value chain model depend on this foundation. Lean Six Sigma can connect disparate processes and drive innovation among them. Technology and best-of-breed applications can enable effective cost-cutting strategies. And governance and talent management can support C-suite efforts to effectively manage change—leveraging supply chain expertise from outside the healthcare industry to introduce best practices that improve efficiency and cut costs across the continuum of care.

## About Cardinal Health

Creating a world class supply chain that is worthy of Gartner recognition means starting with the basics. But, there's nothing basic about getting the basics right. It's about understanding the importance of consistently delivering the right product, for the right price, to the right place and at the right time. Then, healthcare trading partners must collaborate closely to improve the value stream along every touch point. And listen, learn and improve every step of the way.

The right distributor can help you create and maximize the value of a single supply chain. For example, Cardinal Health conducts Joint Value Creation Assessments in which data and processes are compared with national benchmarks—providing a roadmap for optimization.

And benchmarking is critical: "It answers the question, 'How do you know if you're doing well?'" Hurley said. This is where industry best practices come together to inform healthcare providers of their progress. "There are written standards for patient care, but none yet for the supply chain. We're getting there." And tools such as Joint Value Creation Assessments are an important next step in the evolution.

"As the business behind healthcare, we do more than recommend new ways to improve supply chain efficiency and costs," said Mark Rosenbaum, Chief Customer Officer for Cardinal Health. "We collaborate closely with our customers to implement these innovations, measure results and continually improve. You can't do that from behind a desk. You have to work side-by-side with customers every day, walking the hospital floors and looking for every new opportunity to lower costs while maintaining the quality of care. Teamwork is the key to success in the new world of healthcare."

When a distributor can make a customer's value stream flow better, there's true collaboration. And that's the essential step for optimizing your supply chain and achieving greater success in the new world of healthcare.

### Creating a world class supply chain

Across America, healthcare providers are seeing the supply chain as a new opportunity to create a better patient experience at the best possible cost. More than a source of savings alone, the supply chain can be a strategic tool for improving efficiency, safety and quality of care. For more information about how Cardinal Health can support your own supply chain optimization strategy, please visit [www.cardinalhealth.com/healthcaresystems](http://www.cardinalhealth.com/healthcaresystems).



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