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Posted: Tuesday, July 2, 2013 1:56 pm



Nemours Children's Hospital embraces lean supply system as part of 'continuous improvement' process

When Nemours Children's Hospital in Orlando began its lean healthcare cultural transformation journey in 2008, the executive team huddled to define very specific and focused strategic goals, while also aligning all associates in the organization around those goals.

"We've achieved great results but still had variation in those results, and we wanted to find something that would really help us catapult our work in a constant quest for perfection in everything we do – the highest quality, no safety errors, a 100 percent engaged workforce. Clearly, we're focused around quality and patient care and safety, engaged people, and stewardship," said Mariane Stefano, vice president of service and operational excellence for Nemours, whose healthcare career began "as a nurse, rummaging through supply closets."

As part of this quest, hospital leaders began seeking a more efficient and effective management system for medical supplies, the second largest expense for most health systems, accounting for up to 20 percent of hospital costs. They were encouraged to learn about a 250-bed pediatric hospital in the Pacific Northwest that recaptured an estimated 48,000 hours for patient care instead of searching for needed supplies.

The executive team embarked on a study trip to Autoliv, a manufacturer of air bags and other components for the automotive industry, followed by a tour of the Toyota plant in Kentucky to see how lean tools and principles impacted the end product.

"It was totally fascinating to see how a fully lean manufacturing system works," said Stefano.

The team's next stop: Seattle Children's Hospital and Research Institute, now a 400-bed pediatric hospital that's been on a lean journey since the late 1990s. They met with Charles Hodge, the primary architect of the health system's redefined supply chain processes, BlueBin, which had immediately garnered significant savings and cost reductions.

"We saw firsthand how these tools that were being used in the automotive

The BlueBin Demand-Flow Supply Replenishment Model

A dedicated supply technician uses barcode scanning to initiate the automated supply management process.

Here's how it works:

- Supply areas are stocked with two bins for a particular supply.
- The front bin holds a specified level of supplies.
- When the last item of the front bin is used, nurses place it in a designated holding area, triggering a replenishment order.
- Then, nurses pull the second bin to the front.
- Before the second bin is emptied, the first bin's supplies will have already been reordered, restocked and replaced in the supply area.

SOURCE: BlueBin Inc.

manufacturing industry could easily be applied to a healthcare environment,” said Stefano. “We knew the tools and principals of a lean environment could really help in terms of problem solving, removing waste and inefficiencies from our system, and making sure that everything stays focused on the customer.”

When the team returned to the east coast and gathered around the Nemours table, “we knew this is exactly what we needed as part of our organizational transformation journey. We were sold on it once we saw how it worked.”

Nemours is only the fifth hospital in the nation to adopt the unique supply management system.

“This is still relatively new in the healthcare industry, and I like to think we’re at the forefront of this work,” said Stefano.

Nemours implemented BlueBin three months before the children’s hospital opened last October, a timeline that proved challenging and in hindsight was “way too fast,” said Stefano, primarily because of changes in the vendor and supplier distribution flow.

“It was a very fast process and we had bumps in the road,” she explained. “We had to change our main supplier to make sure we had suppliers that would work in this type of Demand Flow system and would be willing to deliver supplies daily rather than weekly, and in the quantity we needed instead of bulk. If we need 10 Band-Aids for a supply unit, that’s now what we get.”

The investment of upfront manpower implementing the system “will be recouped 10 times over,” said Stefano. “One, you’re no longer holding inventory so that cost decreases; two, the most powerful point of the BlueBin system is that it takes the clinical staff totally out of the supply management work.

“I remember 30 years ago as a nurse, I’d be hoarding supplies because we’d often run out of them. I’d get a call for supplies and have to run to the supply room and put in purchase orders. I spent too much time chasing supplies instead of patient care. Now the nursing staff doesn’t have to do anything but go to the supply room and pick up the supplies waiting for them. They’re so happy!”

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Meeting of the Minds

Last month, healthcare leaders from around the country converged at Nemours Children’s Hospital in Orlando to see a unique supply management system that ends the time-wasting task of hunting and searching for supplies, while also ensuring the patient care team has needed equipment to treat its young patients.

Before opening its doors last fall, Nemours implemented BlueBin, a lean supply management system found in only five hospitals in the United States: Seattle Children’s Hospital; Mercy Hospital and Medical Center, Chicago’s first hospital; Presbyterian Hospital in Albuquerque, NM; and Martin Health South in Stuart.

“Before we implemented BlueBin, our store rooms were being overused and we weren’t centralizing the purchase of supplies,” said Rick Cerceo, executive vice president and COO of Mercy. The 410-bed acute care hospital transitioned to the BlueBin system in July 2011. “Our staff was running out of supplies, which delayed procedures and patient care. This forced nurses to start ordering their own supplies and supply rooms began bulging at the seams because they were so afraid of running out. Now I can say these problems are completely gone; the process has been amazing.”

When Martin Health South implemented BlueBin, the rollout schedule began last summer in various ICU areas and concluded in February.

“Before, things were just wherever there was a spot for it,” said Linda Landers, a patient care technician in the surgical intensive care unit (SICU) at Martin Health South in Stuart. “Now there’s a flow to it.”

Nemours’ Alfred I. duPont Hospital for Children in Wilmington, Del., is the sixth location deploying the BlueBin system.

Touring Nemours to see how BlueBin works were representatives from Stanford’s Lucile Packard Children’s Hospital, Oregon Health & Science University, UCLA Health, the University of Michigan

Health System, and Vancouver Coastal Health.

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Visionary Clarity

Expensive technology not needed. Barcodes are the key. Get rid of the warehouse. And take doctors and nurses out of the inventory control process.

Charles Hodge gave that advice on ways to streamline hospital supply inventory in 2009, when he served as chief procurement officer and vice president of supply chain management at Seattle Children's Hospital. At the time, Hodge was in the midst of a four-year journey at the major pediatric referral center to implement BlueBin, a smarter inventory process involving barcodes, simple bins and basic wire racks at key traffic areas and points of care. He had developed BlueBin after working in the automotive industry for 15 years, and transferring its lean manufacturing processes to the healthcare industry's supply management realm.

Hodge's just-in-time inventory system eliminated the hospital's need for its \$5 million, 40,000-square-foot warehouse and millions in inventory. In its first year, the \$200,000 system achieved a \$2.5 million return, said Hodge.

Particularly because the supply management process was new to the hospital industry, executive sponsorship was critical for BlueBin to succeed, said Hodge.

"There's no substitute for executives who are firmly committed to continuous process improvements," he said. "Make sure you secure their strong support and communicate your results early and often to keep the momentum in place."

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Supply Chain Process Redefined

Hospital executives typically knock on Charles Hodge's door because they have a "burning platform" or are taking the next step on their lean journey.

"I often hear something like, 'My supplies are out of control and nurses can't find anything,'" said Hodge, president of BlueBin Inc., a Seattle-based supply chain solution provider for healthcare organizations he established in April 2011. "Or they want to think about pull systems to implement their lean journey."

Hodge, the primary architect of BlueBin, may perhaps seem to be an unlikely source of such an innovative, low startup cost supply management system. His career began in 1993, after earning a business administration degree from California State University. An MBA from the same university in 2001 helped him traverse growing roles of responsibility in capital equipment, electronic chemicals, and automotive manufacturing sectors. Before joining Seattle Children's Hospital, where he rose to chief procurement officer and vice president of supply chain management, he served as regional director in charge of supply chain management operations for Sutter Health's peninsula coastal region, and a member of the health system's corporate strategic sourcing group.

"I took the lessons learned from kanban systems and applied them to elements of patient flow and care delivery," said Hodge. "After I implemented the BlueBin system at Seattle Children's Hospital, other hospitals started calling me, asking how we did it, and the timing seemed right to start my own consulting firm."

With the BlueBin system in five hospitals across the nation, from brand new to nearly 160 years old, and in the midst of the sixth system implementation, Hodge said consulting groups are quite interested in learning more about the lean manufacturing conversion from the automotive to the healthcare industry.

"For example, Joan Wellman & Associates is the consulting firm for Nemours that brought us together," he said. "When hospital leaders start to think about hospitals more like a manufacturing environment, the supply chain bubbles up as a problem because traditional management systems (like the par cart and automation methods) haven't been changed in decades, and they just don't work very well. They only work because clinicians and technicians are heavily involved in managing their own supply chains."

“Our program says no to that. Get those folks back to the patients, the bedsides, and the families. Let the supply chain do it all, and more efficiently. No inventory. No stat calls. No urgencies. No ‘hey, where is this?’ No off contract purchases. It saves a lot of money, space and time, and gives that time back to the patient.”