

Reducing Costs by Improving Process and Technology for Inventory Management in Hospitals. *Legend, Myth or Reality?*

Executive Summary

The ability to reduce costs, improve business operations and improve quality by improving supply chain processes has reached legendary proportions in healthcare. And, huge improvements have been achieved in the last decade. For example, 10 years ago, very little business was being conducted electronically; smart mobile devices tracking patient, procedure and product information on the hospital floor were unheard of; disparate systems stood as lone silos, and not a lot of expertise existed for either sharing or reconciling data among them. Cloud-based services, while in use, weren't recognized as the path to the future of understanding data in healthcare organizations.

Today, with better supply chain experience under our belts and a willingness to embrace best practices, well-established hospitals still see a widening gap between costs and revenue. With all of these improvements, where are the savings? Why aren't we seeing them on the bottom line?

This paper will examine ways to improve costs through better inventory management in hospitals, streamlined business processes to reduce labor expenses, and most importantly, drive hard dollar savings by managing inventory in the most effective manner possible.

Included in this paper (pages 4-6) is a complete list of "Ten Steps to Improve Inventory Management and Reduce Cost." The following is an executive summary of the list:

- 1) Identify what level of inventory / supply is needed to sustain clinical operations.*
- 2) Understand the business and clinical processes in a given area – inventory systems are not "one-size-fits-all."*
- 3) Work across finance, nursing and supply chain leaders to determine how your organization will handle product charges.*
- 4) Look for opportunities to improve your culture and form strong partnerships between supply chain and nursing.*
- 5) Implement processes and technology that give supply chain visibility to every area of the hospital. Consider best-of-breed inventory management solutions that enhance your ERP or materials management system capabilities.*
- 6) Start with a clean slate. Remove expired inventory from your supply areas and work with finance to manage the write-off of these items.*
- 7) Create an environment that supports performance monitoring, and set and measure realistic goals.*
- 8) Inventory management is not a one-time activity. Monitor supply usage on an ongoing basis.*
- 9) Work through your excess inventories. They represent the biggest and best opportunity for inventory reduction to newly established levels.*
- 10) Close the loop on your internal communication processes.*

An Overview of the Challenges

- 1) **Overstocking:** The issues around overstocked inventory in hospitals are perhaps the most challenging. First, poor visibility to the quantity of supplies on hand and where they're stored within the hospital leads to overstocking and hoarding. The stories of supplies being hidden in the ceiling tiles of hospitals may be amusing, but the result is serious: higher inventory costs for organizations that cannot afford them. Second, with an overabundance of some supplies in inventory, products are more likely to pass their expiration date and end up being wasted. Finally, it takes more labor to manage this inventory, as both nursing and supply chain team members have to deal with tracking and locating what they need.
- 2) **Stock-outs:** When it comes to the core purpose of a hospital – taking care of patients – a stock-out may be the worst failure of a hospital's supply chain. For a clinician caring for a patient, not being able to locate the supplies needed during a procedure or treatment is the ultimate breach of trust. Stock-outs cause a wedge between supply and clinical teams, and every one that occurs feels like it's part of an ever-widening gap.
- 3) **Managing inventory as a one-size-fits-all process:** Approaching inventory across the hospital as a single business process may not deliver the required results. It's essential to understand different areas of the hospital. For example, what types of products are being used? Are they implants, disposables or somewhere in-between? What is the velocity at which each product is consumed? How do clinicians access these products? What are the storage requirements of these items? Must they be in a locked cabinet and tracked on an individual item basis? Will patients be billed for them or are they part of a procedure cost or included in the in-patient room fee?

Exploring the Issues

Over-Stocking – We Can't Go on Like This!

Supply management in the hospital is based on the premise of a closed loop system: products are received, recorded into the ERP or materials system, and distributed to the locations they're needed. Supply techs validate inventory levels and inventory management systems show what's been used, so supply techs know when to reorder. So what goes wrong?

In many cases, visibility ends when the supplies are distributed to hospital locations. Let's say wound dressing supplies, including the hard-to-find 4"x10" sterile gauze pads, are distributed to the medical-surgical floor of a hospital. A nurse goes to the supply room and finds that the 4"x10" pads have been replenished, and there are two full boxes. The last two times she looked for this specific sized pad, there weren't any. Now with two full boxes in stock, she grabs one and takes it with her, tucking it away in a drawer where no one else will find it. Although the supply tech just recorded two boxes in that supply area, for a total of 30 individual gauze pads, there are now only a few pads left in one box, so he/she reorders more. Multiply this scenario across all areas of a hospital, across all product lines that aren't managed at the individual item level, and it's easy to see how a hospital can be over-buying. Can we make it worse? Yes. With items "safely" tucked away all over the hospital for future use, these items begin to expire. Now hospitals have to waste product. And expired products are often thrown away without being recorded as waste, so they either appear to be part of actual inventory used or they're lost from the process all together.

What is inventory costing hospitals? Author of [Diagnosing Greatness: Ten Traits of the Best Supply Chains](#), Charles Poirier, wrote in a recent white paper¹, "Consider the amount of inventory that exists across the U.S. healthcare supply chain network. If total healthcare costs in the U.S. are around \$3 trillion, the system probably requires inventories equaling at least \$300 billion. If a conservative 20

percent could be eliminated through better supply chain practices, \$60 billion could be saved in working capital. With carrying costs usually estimated at being at least 10 percent, such a reduction would yield a decrease in working capital of \$6 billion. That is a lot of new free cash flow.”

When a hospital carries more supplies than it actually needs, the result is less cash on hand due to cash tied up in inventory. Additionally, it takes more labor from both supply chain and nursing team members to manage this inventory. The result is that labor costs, already the highest operational cost for a hospital or provider organization, and supply costs, the second highest, are driven even higher.

Stock-Outs – I Can't Take Care of Patients if I Don't Have the Right Supplies!

Nothing could be more frustrating for clinicians caring for patients than not having the supplies they need, when and where they need them. While the supply team works hard to ensure supplies are where they're needed throughout the hospital, lack of visibility makes it hard for the supply tech to succeed. And nothing drives a bigger wedge between these two teams, which must work side-by-side, than a stock-out. If it happens more than once, it's likely to seem like a continual occurrence.

“When staff can't quickly find the supplies that they need, we end up with delayed patient care, frustrated staff, hoarding, and over-ordering of items, which adds costs to our system as well as interruptions to the workflow when materials handlers have to answer the phone to take special orders,” said a hospital-based director of organizational performance at a 300+ bed hospital near Pittsburgh, PA. This hospital moved from a periodic automatic replenishment (PAR) system to a 2Bin approach.

An ICU nurse added, “Since that system has been implemented, we do not run out of things, there are fewer times we're frustrated having to wait for things from materials management. Things are here at our fingertips and we can get to them quickly in emergent and even non-emergent situations.”

Managing Inventory Is Not a One-Size-Fits-All Business Process

Not all supplies are created equal. Hospitals deal with everything from devices that are implanted inside patients for the rest of their lives, to invasive products such as catheters that are used on patients but then discarded, all the way to disposable gloves and paper products such as exam gowns, drapes and table covers. What does your team need? Is it easy access to supplies they need to quickly “grab and go” back to the patient's bedside? Is it tracking, to associate a specific product to a specific patient, attaching that individual product to the patient record for billing and future recovery if needed?

This is the place to consider a lean approach to your processes. Using lean concepts in your process redesign helps eliminate redundant steps, which ultimately helps minimize the number of “touches” by team members. The goal is to continually ensure the right inventory levels keep the right supplies in the right places at the right times.

In each area of the hospital, using the right-sized system helps improve business processes as well as nursing satisfaction. But you must be able to tie these processes together to gain visibility to supplies used and supply velocity in every location.

1) A PAR system is a method that sets specific minimum and maximum levels of a product, which is needed in a specific location in a hospital, usually on a supply cart or in a supply room. With a PAR system, product barcodes need to be scanned individually when taken from inventory to be consumed and also, rescanned as returned if they are placed back in inventory, to ensure PAR counts are accurate.

The PAR level setting for every product should be based on accurate historical data; there's no way to generalize that products are used at the same pace. And unfortunately, history is not necessarily an accurate predictor of the future. Ongoing tracking of and visibility to product use across departments and floors areas of the hospital is needed to continually identify recommendations and make adjustments to PAR settings.

Make sure you have right levels of right supplies in each functional area. In many hospital storerooms there are inactive products that are not used for months and sometimes years, taking valuable space. Often PAR areas have supplies that are rarely used. These supplies occupy space needed for more frequently used supplies.

- 2) 2Bin (also known as Kanban) systems are rapidly gaining in popularity in hospitals, especially in areas where the clinical team must quickly grab the supplies they need and don't have time to scan individual items. The 2Bin approach is based on a very simple concept: each item in a hospital's inventory is placed in two separate bins, placed end to end on a shelf. The two bins combined contain the total amount of inventory required for the days of supply a department or unit plans to keep on hand. Throughout the day, staff members take what they need from the bins. When a bin is emptied it is placed on the top shelf and the next bin is pulled forward. At specified times, supply technicians scan the barcodes on the empty bins, calculate usage and submit the order to refill the empty bins, based on reorder levels an organization has established in the system.
- 3) A limited access system may be used when dealing with items or devices that require controlled access and distribution. Often these systems are called upon to manage pharmaceutical products. Items stored in these systems are often expensive, may be controlled by prescription, need to be tracked as individual items, and are often removed from an inventory location for a specific patient and immediately

assigned to that patient. Limited access systems are often found near the surgical departments of the hospital. These systems are usually locked storage cabinets that use either barcode scanning or RFID, for low-velocity, high-security items.

Managing inventory is an ongoing process and is best achieved by a data-driven analytical model. "If you look at healthcare as a whole, what drives healthcare? Data, data, data," said Perry Willmore, director of Supply Chain Management for Agnesian HealthCare and a 40-year healthcare supply chain veteran. Recently, Agnesian HealthCare implemented a new inventory management solution. "The one thing we were missing at Agnesian HealthCare was the data in the supply chain to drive supply costs. Bottom line, we just couldn't give managers the information they needed to manage their supplies."

One of the biggest and most immediate benefits Agnesian HealthCare realized from the switch to a new system was informational visibility across multiple areas.² "In just the first 30 days, we identified overstocks in our inventory. It also suggested new PAR levels that would cut inventory without stocking out, potentially saving us thousands of dollars." - Perry Willmore, Director of Supply Chain Management

The business requirements of the department or area are the first and possibly the most important consideration. But without a business process and technology infrastructure that meet these needs, the intended processes can be bypassed or misused. Using different approaches in different areas can be hugely beneficial to nursing satisfaction, patient care, supply levels and costs.

It's essential the infrastructure that ties these systems together is able to collect and connect data from all systems, regardless of the process used. Supply chain leaders must have visibility to demand for every product, across the entire organization, in order to accurately plan for their organization's future needs.

Take 10 Steps to Improve Inventory Management and Reduce Inventory Cost

- 1) Identify what level of inventory / supply is needed to sustain clinical operations. Know the replenishment frequencies for each inventory area set for best labor productivity and verify whether supplies are replenished more frequently than necessary. Consider reducing the frequency while resetting the stock levels accordingly, which has helped some hospitals realize a 40 percent to 60 percent gain in labor productivity.³ Create visibility to and an accurate understanding of demand across the entire organization.
- 2) Understand the business and clinical processes in a given area – inventory systems are not “one-size-fits-all.” Use lean concepts to redesign processes that eliminate redundant steps and minimize the number of “touches,” while ensuring you have the right inventory levels in the right places at the right times. An example of an area that may have unique requirements is the Emergency Department (ED). With immediate access needed to supplies, a system that can specifically support a quick “grab-and-go” approach, while eliminating stock-outs, is required.
- 3) Have the conversation among finance, nursing and supply chain leaders to determine how your organization will handle product charges. What products must be captured and charged directly to the patient, versus those items that may be included as part of a procedure charge, or very

low-cost and included in the room charge for an in-patient stay?

- 4) Look for opportunities to improve your culture and form strong partnerships between supply chain and nursing. Create a leader in each region or for each business process; a super user who knows the system and processes. Identify a clinical champion for each area. Nurses are powerful partners in the design, implementation and adoption of lean processes. “Lean management gives nurses the power to change the environment where they work so they can deliver safe, more effective patient care and contribute in a meaningful way,” Joyce E. Johnson, RN, PhD, NEA-BC, FAAN, an experienced nurse executive and healthcare consultant in Frederick, MD, said. She added nurses are well-suited to lead lean-management teams.⁴
- 5) Implement processes and technology that give supply chain visibility to every area of the hospital. To reduce inventory costs, accurate, real-time item velocity, across the entire organization, is a requirement, so consider best-of-breed inventory management solutions and processes that can enhance your ERP or materials management system capabilities. Identify the technology that’s required to create an effective data infrastructure behind your processes. While your ERP system can continue to manage your item master, generate purchase orders, manage contracts, and support the needs of finance, your supply chain needs may not be as well-supported.

ERP and materials systems aren’t specifically designed for inventory management, and therefore it is critical to supplement these systems with better analytical tools that address the inventory optimization issues of each supply area. Because you need to extend your reach into every supply area in the hospital and connect the data, you can benefit from systems that connect to cloud-based technology, where benefits can be attained through data aggregation and greatly enhanced, accurate, real-time reporting.

6) Start with a clean slate. What does this mean? Actually remove expired inventory from your supply areas and work with finance to manage the write-off of these goods. Take them out of inventory, return the space on your shelves to productive supplies that your clinical team needs to care for patients. Make certain the items being removed aren't considered "used" by your inventory reporting system. Instead, they should be "wasted" so they aren't factored into the actual velocity reporting of your supplies.

7) Create an environment that supports performance monitoring, and set and measure realistic goals. In many organizations, goals are set, but ongoing measurement proves more difficult. So, start with the goals. Measuring inventory turn improvements provides good indicators of your direction, but also, consider goals related to the dollars and turn your measurement into the language your CFO and CEO will appreciate. Understand the cost of inventory on-hand in your organization at the beginning of your journey. By measuring the cost of products, supplies and devices you have on hand at the beginning of your process, and implementing reporting tools and processes that allow you to understand and measure the inventory you're carrying, you can get views of your process six months into the process, a year into the process and on an ongoing basis.

Assign responsibility to an individual on the supply chain team who can take the lead in measuring success. Let him/her build the key performance indicators for ongoing analysis and to create a continuous improvement environment. Study the 80/20 rule (The Pareto Principle) of your inventory costs, and focus on those supplies that represent 80 percent of your spend. These can have the most significant and immediate impact on your inventory costs. For example, look at your OR processes. Since OR inventory typically accounts for 50 percent or more of a hospital's inventory, it is important to employ a dedicated resource or materials manager who is focused specifically on OR management.

8) Remember inventory management is not a one-time activity. Leaders need to monitor supply usage on an ongoing basis, so be sure you're using reporting tools that continuously measure velocity for every supply your organization uses. This allows you to adjust your levels or reordering processes based on actual demand.

9) When you've established good visibility to what's needed, work through your excess inventories. They represent the biggest and best opportunity for inventory reduction to newly established levels.⁵ Reducing excess inventories reduces inventory dollars on the balance sheet and improves financial ratios. And unlike scrapping obsolete items, there is no negative financial impact from inventory write-offs. Cash flow improves, and there is less chance of dealing with obsolete products, so you're also moving toward reduction of future write-offs.

- 10) Close the loop on your internal communication processes.
- a. Earn trust from your clinical staff to help eliminate hoarding supplies in undisclosed locations. Let the clinical team know your plans and how new processes will help them.
 - b. Understand that change management, with a dedicated approach to reviewing and revising policies and processes, is needed. This requires a commitment to managing change and process compliance.
 - c. Proactively communicate results, successes and lessons learned. Teams across the organization need to know what's working well and what still needs improvement in order to be part of the change process.

Clinical and Supply Chain Results

In the ED at Penn State Hershey Medical Center, the nurses needed better, faster access to supplies. “We had a cabinet-based system that wasn’t working, and what was starting to happen was that we were creating work-arounds. Soon, we had supply carts everywhere. And when it got busy, when you really needed supplies, they weren’t there,” said Michele Nauman, RN, ED. Added Nancy Savel, Clinical Head Nurse, ED, “What we were doing wasn’t working, but we didn’t know what a solution was. So when Matt [Brennan, Director, Supply & Logistics], introduced this concept, I was extremely excited.”

What Matt Brennan recommended for the ED was a 2Bin solution, which gave the ED clinical team quick and easy access to the supplies they needed for patient care, and a system that ensured products were there whenever needed. Nursing satisfaction had been extremely low with the cabinet-based solution, coming in at 10 percent. When nursing satisfaction was measured following the implementation of 2Bin, it was over 90 percent.

At the 300+ bed hospital near Pittsburgh, one nurse manager reported, “Since moving to a 2Bin approach, my variance report and my budget for supplies has been under budget every month since we put this in place. I don’t have to explain why I used too many supplies because we don’t.”

Another nurse manager added, “When my supply chain team first came to me with the idea, I was totally against it. But now, it’s truly one of the best systems we have ever implemented in this hospital. There’s never a question that supplies are going to be available to the nurses, they are consistently in the same space and I have not had one complaint from a nurse since this was implemented. We have never had a shortage.”

Make overstocked supplies and stock-outs a thing of the past. You’ll earn the trust and partnership of your clinical team members, help your organization improve the delivery of patient care, improve cash on hand and reduce unnecessary costs.

References

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