Binary Stream

Whitepaper:

A guide to consumption-based supply chains in healthcare

Healthcare Materials Management
BY BINARY STREAM SOFTWARE

Executive summary

The challenges confronting healthcare organizations are numerous and can often feel daunting. Many organizations face large expenditures in materials purchasing as costs continue to escalate across the industry. Despite this challenge, management must run efficiently and at the lowest possible cost per patient.

This paper will explore the complexities inherent in consumption-based supply chains within the healthcare industry and ways to solve the most significant challenges organizations face today. It will shed light on solutions to those complexities by defining the core strategic issues facing healthcare today. It will explain the main functional areas of material workflows, the difficulties encountered, and finally, best practice for solving and streamlining your healthcare supply chain.

Binary Stream

Table of
content

Who should read this whitepaper?

This paper focuses on healthcare organizations with significant investments in materials consumed within their day-to-day operations. Senior management is often tasked with solving many of the issues discussed and will find the insights of particular relevance. However, this paper is of interest to anyone interested in solving supply chain management's complexities in today's healthcare industry.

The business of healthcare

The face of healthcare has evolved dramatically over the past decade. Although healthcare is primarily about easing the pain and suffering of others, it is also a business. Organizations must see themselves as such if they are to survive as costs escalate. By maximizing resources and minimizing overheads, both profit-driven and non-profit organizations will enable the provision of the best possible care to the highest number of patients.

Primary cost drivers in healthcare

The primary cost areas in healthcare are similar to those in other organizations. It takes both human labour and materials consumption to drive operations and produce the services required for patient care.

The highest single cost is labour in the form of wages and salaries. The second- largest cost is materials in the form of daily "consumables" and items with long-term usage lifespans.

The management of materials resources has come under greater scrutiny in recent years.

> "Patients deserve and expect a high level of service. Medical professionals are adapting to new clinical demands and research solutions, and administrators must focus on managing resources as effectively as possible. These pressures have led to a rethinking of administrative approaches, especially for back-office functions such as supply chain management."
>
> **BPS Supply Chain Secretariat, 2006**

Central to managing materials consumption and the healthcare supply chain are the following questions:

1. **What is the level of care required by the organization regarding the materials it must expend/purchase?**
2. **How can this level of care be delivered in a way that minimizes the total cost of materials?**

It is this second question that we will investigate in greater depth.

Best practices in healthcare supply chains

Supply chains are a tricky topic given the different types and levels of healthcare providers that exist. For example, what may be relevant to materials management in a hospital environment may not apply to a physician clinic.

It can be challenging to find new articles that guide healthcare material practitioners toward an optimal model. Usually, approaches suggested cover specific strategic areas, leaving readers to interpret the optimal ways of operating.

For instance, in the Ontario Hospital Supply Chain Metrics Working Group report entitled "Performance Measurement" - (BPS Supply Chain Secretariat, 2006). The article suggests a 4-pillar vision:

1 Plan informed decision-making through effective anticipation of product supply and demand.

2 Source and procure excellence in strategic and transactional interactions with end-users and suppliers, enabled by supply chain tools and processes.

3 Move effectively and responsively: right product, right place, right time.

4 Realization of supply chain efficiencies through supply chain payables integration and eCommerce.

These strategic pillars align with the functional areas covered in the next section.

Functional areas in healthcare materials management

Above and beyond the strategic nature of delivering materials at minimum cost to the desired level of patient care, healthcare materials management must be broken down into its functional, operating elements to see where its actual challenges lie.

Consumption areas

such as nursing units or clinical departments that need to requisition the materials they need.

Materials acquisition areas

that procure materials, such as the purchasing department.

Fulfillment areas

where materials are received or fulfilled as required.

Distribution areas

organize how materials are issued and distributed to each consumption site for use in patient care.

Reporting and finance areas

report on current inventory levels on a site-to-site basis, item usages, and forecast into the future using cost reports, determining the operations' financial implications.

Understanding the issues inherent in each of these functional elements is essential to finding the right solutions. We will explore why software applications such as Healthcare Material Management can help enable a busy materials management environment.

Key healthcare supply chain requisitioning challenges

The requisitioning of materials to numerous consumption sites in a dynamic healthcare organization has always been a challenge for several reasons. Some of these reasons are:

Challenge: the high cost of licensing users for supply chain software

Large numbers of people within the organization need to requisition materials as they need them. These people may not know where these materials come from or the most efficient/cost-effective way to obtain them—they only know that they need them to treat patients. The large number of users that need to access a system to requisition goods translates into high software license costs that every organization tries to minimize.

Solution: minimize licensing costs through third-party integration

To counter these potentially high user software costs, Binary Stream Software has enabled Healthcare Materials Management to "integrate" to particular, best of breed, third-party internet-based requisition applications. In doing so, many requisition users can requisition items into the system at a minimal cost.

Challenge: decentralized systems can cause bottlenecks in supply chains

Many healthcare environments operate "24/7" and may need a combination of centralized vs. decentralized methods to get materials to patients within short periods.

Solution: hybrid solutions that allow for both centralized and decentralized processes

Healthcare Materials Management software can work in both centralized and decentralized modes. Using a third-party requisition application, materials requests can go through quick procurement cycles where the users can order goods directly through these internet-based applications described above—bypassing the more centralized processes of centralized purchasing. The resulting purchases still work their way down into the rest of the system as needed.

How centralized requisitioning helps improve processes and lower costs

In centralized mode, third-party requisition applications work only to pass "approved" requisitions to purchasing. When they do this, the system determines whether the item is one that is usually kept in stock (tagged as a "stock" item) or one that must be brought in from a vendor as it is not kept in stock (called a "non-stock" item).

Stock items are routed from an inventory "site" within the organization with the item requested, disregarding the need to purchase it unless it is out of stock from the replenishment site. An approved requisition with a non-stock item— which is not kept in stock— gets sent immediately to a PO Preview queue that allows buyers to purchase it.

Due to the financial ramifications of the requests, approval processes may be needed before such materials requests can be fulfilled. The approval processes of the third-party requisitioning packages are embedded in each product. They send email notifications to each approver. The approval process works typically on dollar amounts/limits.

Procurement

Healthcare Materials Management can work in both a decentralized procurement mode or a centralized purchasing mode, as illustrated above. The remainder of this paper will focus solely on using Healthcare Materials Management in a centralized mode.

Consumption-based procurement operates typically in two distinct workflows: order specific goods from a user requisition and order goods to replenish an inventory site. Let's take a closer look at each.

1. Ordering specific goods from a user requisition

Once an approved requisition reaches purchasing (for example, a non-stock item), it can either be purchased directly through PO Preview or procured through the PO Entry interface shown below.

Note the following features specifically designed for busy healthcare situations

PO document types:	You can define different kinds of POs. For instance, you define a PO type for typical consumables, another for capital projects or maybe another for items that come from requisition requests as per the above example (a "REQ" PO type).
Site ID/facility:	The specific inventory "site" and specific facility associated with the PO project type, whether the PO should be assigned to a specific capital project or not.
Unit of Measure (U of M):	On every PO, the purchasing U of M is defaulted. In this example, a case with six boxes of six each (CS/6/6).

2. Ordering goods to replenish an inventory site

This is also known as site replenishment. Better materials systems should have an automated way to replenish sites from their existing stock levels to the desired level – whether it be minimums, maximums, par levels (which we will detail later), etc.

Healthcare Materials Management provides this functionality and more. One inventory site can be replenished all at once or many times. Restock items from locations within the organization. Others must be purchased from outside vendors.

Once many POs have been generated during a heavy day of purchasing, and through the mass PO automation shown above, Healthcare Materials Management automates each PO generation.

Auto Replenishment Card

TEMP1

→ Process | More options

Auto Replenishment

Field	Value	Field	Value
Template ID	TEMP1	Item No.	02-GLOVES
Template Description	353453	Vendor No.	
Transaction Type	All	Location Code	NURSING
Replenishment Level	By Par Level	Replenishment Location	

Auto Replenishment Line

Item No.	Item Description	Base Unit of Measure	Location Code	Location Description	Replenish... Location	Document Type	Quantity on Hand	Par Quantity	Par Mea
→ 02-GLOVES	SURGICAL GLOVES	PCS	NURSING	NURSING		Purchase R...	30	200	PCS

EAST · East Warehouse

HMM Location Par List | 🔍 Search | ● Analyze | + New | 🗒 Edit List | 🗑 Delete

Item No. ↑	Item Description	Manufacturer Code	Manufactu... Item No.	Replenishment Location	Replenishment Location Desc	Stock	Shelf No.	Auto Issue (Sto...	
→ 01-BANDAGE	BANDAGE	FIRST	BANDAGE ...			✓		☐	
1896-S	ATHENS Desk			WAREHOUSE	CENTRAL WAREHOUSE	☐		☐	

Binary Stream

There are many different transmission methods from Email, Fax, EDI, etc. All selected POs will be sent off to the individual supplier(s)) by selecting the appropriate lines and processing. Once sent, the PO status changes from "New" to "Released" in Microsoft Dynamics 365 Business Central.

Fulfillment

Fulfillment covers the receiving of goods into the organization and inventory site maintenance and par-level maintenance. It also utilizes handheld scanners as they are now prevalent in busier healthcare environments to streamline busier receiving areas.

1. Receiving

The receiving of goods in a typical consumption-based organization has two facets: the physical receiving of the goods and the delivery of such goods to specific consumption sites "on receipt" in some cases.

Auto-Receiving allows users to receive goods over many lines/many POs very quickly. Goods received but destined for immediate shipment to a consumption department can be instantly sent with a delivery ticket.

Labels needed to put goods into central supply locations or to identify goods can be instantly run on demand during the receiving process.

2.   Inventory site maintenance

Inventory sites in healthcare have many functions. They can be as small as a nursing cart on a floor that only dispenses materials to patients. They can be used to both dispense and replenish materials.

Sites can have their items controlled at Par levels, can have the right to requisition goods in decentralized modes, to act as a replenishment site and to be replenished by a (default) replenishment site. Whether a site is a small nursing cart or a large central store, Healthcare Materials Management handles them through the same interface.

3. Par level maintenance

Par level is a concept used extensively in healthcare. It is an arbitrary amount/ inventory level of any item in stock and represents the desired inventory level for an item at a site. It may be different than a maximum number, a minimum number or an average. It is what the organization feels that they must carry to ensure proper patient care.

ICU · ICU UNIT												✓ Saved

HMM Location Par List   🔍 Search   ⬤ Analyze   + New   📝 Edit List   🗑 Delete

Item No. ↑	Replenishment Location	Replenishment Location Desc	Stock	Shelf No.	Auto Issue (Sto...	Par Unit of Measure	Par Quantity	Total Quantity	Qty in Base Unit of Measure	Current Cost	Par Cost
→ 01-BANDAG ∨	WAREHOUSE	CENTRAL WAREHOUSE	☑		☐	PCS	5	5	5	25.00	125.00
02-GLOVES	WAREHOUSE	CENTRAL WAREHOUSE	☑		☐	PCS	10	10	10	47.00	470.00
03-GAUZE	STOREROOM	STORE ROOM	☑		☐	SET	5	5	25	250.00	1,250.00
07-CASTS	WAREHOUSE	CENTRAL WAREHOUSE	☐		☐	PCS	10	10	10	50.00	500.00

Sites can control items at par levels, can have the right to requisition goods in decentralized modes, act as a replenishment site, and be replenished by a (default) replenishment site. Whether a site is a small nursing cart or a large central store, Healthcare Materials Management handles them through the same interface.

Handheld devices and bar-coding

One of the fastest-growing areas in hospital materials management today is handheld devices with bar code scanners. They make product recognition quick and straightforward while still reducing errors.

While warehouse workers primarily use handheld scanning devices in central stores, many more are being used at the consumption site level to keep current inventories in balance and issue goods to patients.

Consumption/issuance

We have covered many of the issues concerned with getting materials to the foot of the patient. But the act of "issuing" these goods is fraught with problems for today's healthcare centers.

Many healthcare organizations wrestle with how and when to expense/relieve goods out of inventory. The problem is one of control. Many healthcare organizations do not have the workflows to instantly expense goods from a consumption site inventory to a patient, i.e. perpetual inventory control. Staff at healthcare consumption sites have the primary responsibility of patient care, not relieving inventory from computers.

Many healthcare organizations still manage smaller consumption site inventories periodically. In other words, unless a stock count is taken and the difference is written off against inventory in the financial system, the actual items in inventory versus what the computer is showing is almost always incorrect.

Many healthcare organizations use an "issue" transaction when they get goods from either a supplier or another inventory site. An issue transaction says that as soon as a consumption site receives the goods, they must be expensed—not recorded in the inventory valuation. In this way, the organization is expensing everything as soon as possible, meaning that they need only take year-end inventory counts of each consumption site.

While this appears to be a clean and efficient answer, many healthcare organizations still require greater control of their inventory. While the above solution solves accounting issues, it does not address inventory control/shrinkage/lost charges. These are areas many healthcare providers still want greater control over.

Binary Stream Healthcare Materials Management can handle both scenarios—those using expensed "issue" transactions and those wanting inventories to be transferred to inventory sites and then expensed as they are consumed.

Materials can be sent either as an expensed issue transaction to a site or a more typical inventory transfer, meaning that it can be expensed later in the consumption site.

Lost charges

Many healthcare organizations wrestle with inventory shrinkage. For example, your inventory should have ten in stock, but you only have five on the shelves.

In many busy and for-profit healthcare environments, materials can get used in many ways and become unaccounted for. While theft is always a prevalent issue, defective items, spoiled or expired items sometimes get disposed of in consumption areas and do not get accounted for or relieved from computer inventory balances.

In for-profit healthcare situations, inventory shrinkage due to items physically consumed but not issued off computer item balances is called Lost Charges. For example, if we start with an inventory balance of ten units and three are billed out to patient care, we should balance seven remaining. If we do a stock count and find that only five remain, we have potential lost charges of two.

So, the question is then how healthcare organizations bring in data from a billing software package and blend it with materials data? While the data can be extracted manually when the amount of data is small, what happens when you need to analyze data over many items?

Completing an inventory count

Inventory counting in Healthcare Material Management typically involves the use of specialized handheld devices equipped with barcode scanners. The HMM portal allows users to log in, select a location and an item, scan inventory, verify count and submit count data back to MS D365 Business Central. To reconcile any discrepancies between the physical count and the recorded inventory levels, HMM will leverage Business Central functionalities by generating and posting Physical Inventory Orders.

Phys. Inv. Order No.		Recording No.	Item Number.	Item Description.	Location	UoM	Quantity Expected	Quantity Counted.	Transaction Date.	Portal User
PHIO00033	⋮	8	1017	Non-Inventory	EAST	PCS	1	1	1/23/2024	DEEPAK@BINA...
PHIO00026		2	01-BANDAGE	BANDAGE	EAST	PCS	9	2	1/23/2024	DEEPAK@BINA...
PHIO00023		1	01-BANDAGE	BANDAGE	EAST	PCS	9	9	1/23/2024	DEEPAK@BINA...

eCommerce and EDI

Recent materials management reports have demonstrated distinct financial benefits and patient care advantages in implementing eCommerce and EDI.

As in requisition management, Healthcare Materials Management produces integration to eCommerce and EDI in a best-of-breed approach. eCommerce functionality is handled through the "punch-out" capabilities provided through our approved requisition management vendors. EDI functionality is dealt with through approved integration to best of breed EDI vendors.

"A wealth of evidence demonstrates that implementing e-commerce and other supply chain leading practices can improve patient care, enhance service levels and produce financial savings."

BPS Supply Chain Secretariat, 2007

Reporting

Most Materials systems always rely on robust reporting, and it is also one of the most significant areas of concern for today's supply chains.

Effective reporting in Materials Management not only looks at the performance "after the fact" but should help anticipate how to manage for the future. Again, citing the Ontario Hospital Supply Chain Metrics Working Group and its first pillar "functional vision", which describes planning as "informed decision-making through effective anticipation of product supply and demand." (BPS Supply Chain Secretariat, 2006).

This reference mentions both supply and demand. While most of this article has concentrated on the supply side, what does the demand side entail? The demand side in healthcare usually centers on historical material usage or consumption to infer future demand.
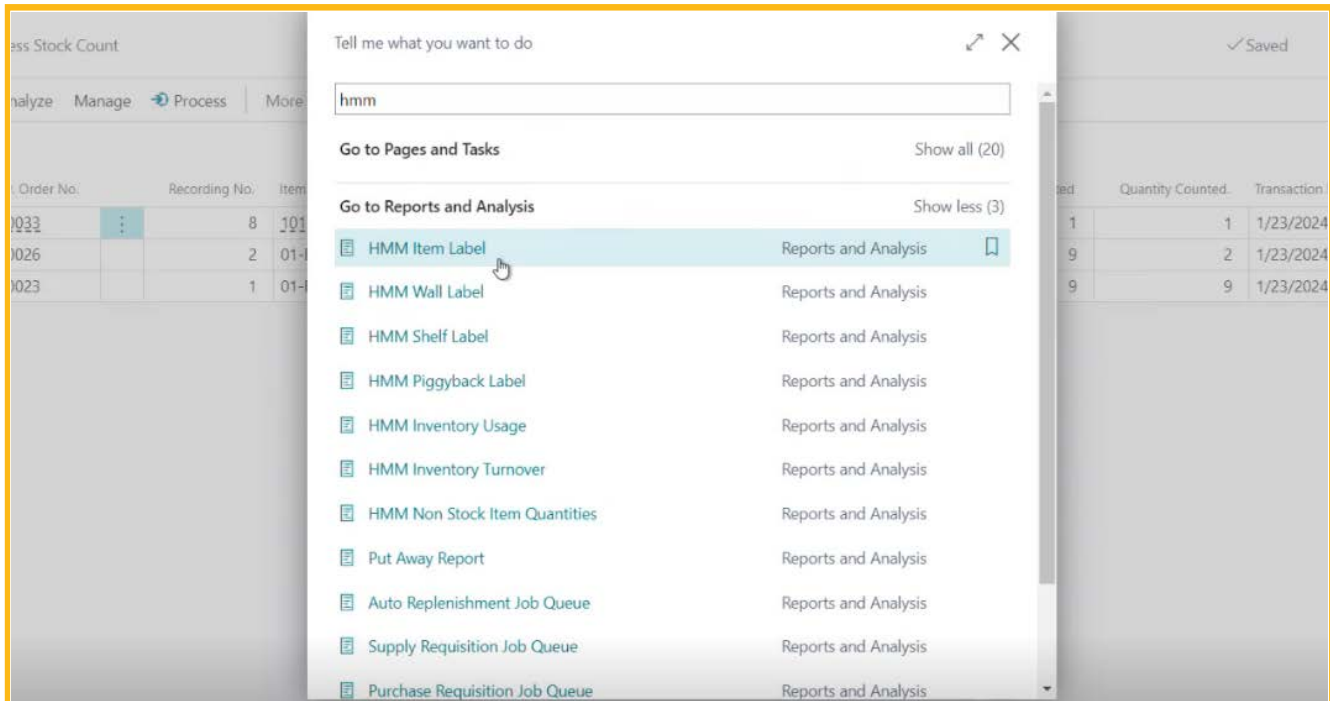
Item usage reports can be run across one site or many, based on time periods or across multiple items. Most reporting screens in Healthcare Materials Management can be easily exported into Excel for further analysis.

On the supply-side, a flexible materials application will have out-of-the-box "canned" reports as well as the ability to create quick "queries"" on the fly.

One of the most significant advantages that a Microsoft D365 Business Central application brings to the table is its data accessibility. Using reports we can run relevant and user-friendly queries in real-time.

HMM Inventory Turnover
CRONUS USA, Inc.

March 1, 2024
1 Of 3
DEEPAK

For the period of 12/1/2021 - 3/31/2024

| Location | EAST |
| 2 Bin | No |

Usage Date	Item Number	Item Description		Unit of Measure		Current Cost
Stock	Par List Qty	Transfer In	Transfer Out	Qty Used	Inventory Turnover	Days Inventory
8/1/2023	01-BANDAGE	BANDAGE		PCS		25.00
Yes	100	2	0	0	0.00	0.00
8/1/2023	1015	1015		PCS		0.00
Yes	100	2	0	0	0.00	0.00
8/1/2023	1896-S	ATHENS Desk		PCS		780.70
No	100	2	0	-3,000	-62.10	-5.88
8/1/2023	1906-S	ATHENS Mobile Pedestal		PCS		338.20
Yes	100	2	0	0	0.00	0.00

Quick query was developed to show receipts that are now past the promised delivery dates. Many relevant queries such as this are supplied out-of-the-box, as well as queries you can create as you require them.

Works cited

1. BPS Supply Chain Secretariat, T. B. (2006). Performance Measurement - A report by the Hospital Chain Metrics Working Group. Toronto: Ontario Ministry of Finance.

2. BPS Supply Chain Secretariat, T. B. (2007). Supply Chain Modernization in Ontario Health Care. Toronto: Ontario Ministry of Finance.

Binary Stream

Streamline your supply chain with Healthcare Materials Management

Advanced inventory and procurement-to-payment management trusted by thousands of healthcare providers.

Learn more

Microsoft preferred solution

Microsoft Dynamics