GreyOrange

HEALTHCARE JIT FULFILLMENT, EXPLAINED

Introduction

In healthcare, access to a wide range of medical supplies is essential for day-to-day activities such as wound care, surgery and diagnostic testing. From a logistics standpoint, that means that these supplies always need to be accessible for hospitals to function properly. Space constraints, especially in affluent urban areas, are at odds with this need. Hospitals have had to opt to allocate more space for patient beds and clinical areas at the cost of extensive inventories. As a result, they've begun to rely heavily on just-in-time (JIT) fulfillment systems to keep them operational.

In the JIT approach, hospitals have their supplies delivered directly to their facilities on a near-daily basis, reducing the need for large storage areas. In some cases, supplies can even be delivered straight to the point of use, such as nurses' stations, effectively eliminating the need for internal storage.

The implementation of JIT fulfillment can follow two primary models. In one, hospitals manage their own JIT warehouses and use advanced automation to streamline operations and reduce costs. This self-managed approach can offer significant financial benefits, including the potential for hospitals to leverage their logistics infrastructure for direct-to-patient deliveries.

In the other model, medical suppliers take on the responsibility of managing JIT warehouses for their hospital clients, ensuring timely delivery and adherence to requirements such as using specialized totes, adhering to route preferences, and complying with hospital planograms. This service-oriented approach meets hospitals' needs for inventory and space optimization while positioning suppliers as crucial partners in the healthcare supply chain.

Both approaches emphasize the importance of automation solutions in optimizing supply chain management, ultimately helping hospitals save on costs and improve patient care. JIT fulfillment strategies enabled by automation and RFID technology are helping healthcare providers improve their inventory visibility, operational efficiency and financial sustainability while recouping sunk costs.

This ebook explores how hospitals can achieve precise inventory management, maintain optimal stock levels and reduce waste by implementing robotic warehouse systems and RFID technology into their JIT fulfillment strategies.

Hospitals lose up to **$5 million annually** to misplaced/aging/expired medical supplies[1].

The tall order — what hospitals are up against

Misplaced/Expired supplies

Hospitals in the US lose around 25% of their annual spend to expired/misplaced items. Nearly one in four hospital staff members[2] (24%) have seen or heard about a recalled or expired product being used on a patient.

Limited on-site storage

Hospitals, often located in affluent areas, face significant space constraints. Allocating valuable real estate for storage means fewer beds and treatment rooms, directly impacting their ability to serve patients.

Demand for value-added services (VAS)

Hospitals are looking for VASs such as customized totes (e.g., decanted orders picked into totes to avoid breaking them open on-site, easy waste management, etc.), preferred delivery routes and compliance with specific shelf planograms.

High holding costs

Hospitals spend over $25 billion annually on supplies[3], accounting for up to one-third of healthcare expenditures. Inefficient logistics lead to high inventory holding costs, tying up capital that could be used elsewhere.

Medical waste

U.S. hospitals generate more than 4.7 million pounds[4] of waste every year, which equates to roughly 27 pounds of waste per staffed bed per day. Additionally, U.S. hospitals dispose of 2 million pounds of unused supplies each year at a cost of $15 million[4].

Discrepancies in safety stock

Organizations often respond to supply shortages by building more warehouses for safety stock, assuming that increasing inventory will solve the issue. However, the root cause — lack of end-to-end visibility into on-hand inventory — remains unaddressed. This often results in supply shortages at critical points of use despite sufficient overall inventory.

Patient outcomes

Delays and errors in supply delivery can directly impact patient care and outcomes. The availability of essential medical supplies is critical for patient safety and care quality. Traditionally, nurses have been responsible for tasks like the identification of received inventory and the tagging and monitoring of expiry dates. This can burden the healthcare system, as nurses have other high-value tasks that require more attention.

Non-commitment to supply chain resilience

The lack of a strategic logistics plan leads to fragmented processes and increased labor costs. Hospitals lose millions annually due to operational inefficiencies in logistics. In a 2021 survey conducted by Deloitte and the Scottsdale Institute[5], 80% of participants said that leadership is a key accelerator of digital transformation, more than any other option.

Medical supply chain implications

Muddled end-to-end visibility and fragmented processes in the medical supply chain lead to high costs, wasted resources and potential risks to patient care quality and safety.

Implementing an advanced warehouse automation system (WES) can optimize logistics operations, manage just-in-time inventory and guarantee complete supply chain visibility. This reduces waste and holding costs while enhancing patient outcomes by ensuring the availability of medical supplies. Forward-thinking logistics management is essential for financial sustainability and operational excellence in today’s healthcare environment.

The “cure-all” solution

GreyOrange’s advanced WES, GreyMatter, combined with Autonomous Mobile Robots (AMRs) and RFID technology, provides a robust framework for implementing JIT inventory systems in healthcare at scale.

Industry context: receptiveness to automation

More medical supply companies and hospital networks are moving towards next-gen productivity, emphasizing efficiency as a core value of their supply chains. 57% of healthcare providers view the supply chain as crucial to business strategy (The Future of Supply Chain for Healthcare Providers' 2024, Gartner Report), higher than the overall industry average of 48%, especially when it comes to reducing Cost Per Unit (CPU)[6].

Minimal capability ◔ ◑ ◕ ● Maximum capability

	Efficiency	Productivity	Next-gen productivity
	⊖ Same unit of value per ⌄ Reduced unit of cost	⌃ Increased unit of value per ⊖ Same unit of cost	⌃ Increased unit of value per ⌄ Reduced unit of cost
Value	Cost reduction	Growth	Growth and innovation
Objective	Minimize cost of inputs to maintain or improve profitability	Maximize conversion of inputs to achieve profitable growth	Maximize conversion of innovations for sustainable growth
Leverage tangible assets	◑	◕	●
Leverage intangible assets	◔	◑	◕
Drive revenue	◔	◕	●
Exploit innovation	◔	◑	◕
Investment risk	Low	Medium	High
Time horizon	Short-term (Now)	Medium term (Next 12 months)	Long-term (1-3 years)
The work	Reducing costs related to running curent operations	Extracting value from current investments to scale SC operations	Adopting innovations to drive growth with less capital and fewer resources

Source: Gartner

Example in implementation

Advanced digital solutions can centralize order data, boost supply chain resilience, reduce costs, ensure timely delivery and, ultimately, improve patient outcomes. Automation vendors can foster innovation among healthcare leaders by simplifying the value of fulfillment solutions.

What does automated JIT fulfillment in healthcare look like?

Use case 1: hospital-managed JIT warehouses

Scenario:

Some hospitals choose to manage their own JIT warehouses, providing a steady supply of medical consumables directly to nurses' rooms and eliminating the need for intermediate storage within the hospital.

Benefits of automating this process

Direct replenishment: Supplies are delivered directly to the point of use; supplies are readily available without occupying on-site hospital storage space.

Efficiency and accuracy: AMRs and RFID technology streamline the picking, packing and transportation of supplies, reducing the likelihood of human error and increasing operational effectiveness.

Scalability: Hospitals can expand their warehouse operations to handle direct-to-customer orders, creating a new revenue stream.

Use case 2: supplier-managed JIT warehouses

Scenario:

Alternatively, medical suppliers can take the lead in managing JIT warehouses for their hospital customers, taking responsibility for the delivery of their supplies.

Benefits of automating this process

Turnkey solutions: Suppliers handle the complexities of JIT warehousing, allowing hospitals to focus on patient care.

VAS integration: Suppliers can offer customized delivery solutions, including special totes, sanitization and preferred routes, enhancing service levels.

Technological lever: By utilizing GreyOrange technology, suppliers can provide a high level of automation and real-time inventory tracking for precise, on-time deliveries.

Key components of the solution

01

Advanced WES (GreyMatter)

- **Impact:** Reduces manual labor and human error by 99.8%
- **Automated reordering:** Triggers replenishment when inventory falls below set thresholds
- **Real-time analytics:** Provides actionable insights for better decision-making

02

Autonomous Mobile Robots (AMRs)

- **Automated delivery:** Ensures timely and accurate delivery of supplies within hospital environments
- **Safety:** Equipped with LiDAR SLAM sensors for safe navigation

03

RFID technology

- **Real-time inventory tracking:** Placing RFID tags on products and installing readers in hospitals can enhance accuracy and reduce losses
- **Automated reordering:** Enables the system to know precisely when and where replenishment is needed

04

Milk run logistics for supplies

- **Regular delivery cycles:** Optimize delivery routes, reducing costs and guaranteeing a consistent supply

05

Minimum order triggers

- **Threshold-based reordering:** Maintains optimal inventory levels, minimizing overstocking and stockouts

06

Planogram compliance

- **Organized storage:** Supplies are stored according to hospital planograms for easy access.

Conclusion

Implementing advanced JIT fulfillment systems with GreyOrange technology simplifies the complex supply chain needs of hospitals so they can focus on what they do best – providing exceptional patient care. Whether managed by the hospitals themselves or proactive medical suppliers, these solutions offer a pathway to effective, reliable and scalable healthcare logistics.

About GreyOrange

GreyOrange is at the forefront of revolutionizing warehouse automation and supply chain optimization. Our cutting-edge technology, including GreyMatter WES and AMRs, empowers businesses to achieve unprecedented efficiency and accuracy. Partner with us to transform your JIT fulfillment processes and stay ahead in the competitive healthcare landscape.

BOOK A DEMO

References:

1. https://www.ghx.com/the-healthcare-hub/the-inventory-diaries-pt-1-discovering-nearly-200k-worth-of-expired-products-at-one-hospital/
2. Gerhardt, Wendy, et al. “Key Determinants for Resilient Health Care Supply Chains.” Deloitte Insights, Deloitte, 11 July 2023, www2.deloitte.com/us/en/insights/industry/health-care/healthcare-supply-chain.html
3. “Improving Hospital Supply Chain Data Yields Cost Savings.” Health Catalyst, 17 May 2022, www.healthcatalyst.com/success_stories/hospital-supply-chain-hawaii-pacific-health
4. “Future of Healthcare Supply Chains: An in-Depth Analysis.” GHX, www.ghx.com/the-healthcare-hub/supply-chain-future-healthcare
5. Si-Admin. “Digital Transformation: From a Buzzword to an Imperative for Health Systems.” Scottsdale Institute, 19 Dec. 2023, scottsdaleinstitute.org/digital-transformation-from-a-buzzword-to-an-imperative-for-health-systems/
6. O’Daffer, Eric, et al. “The Future of Supply Chain for Healthcare Providers — 2024 Report.” Gartner, 28 Feb. 2024, www.gartner.com/document/5197863
7. Hidden Costs of Healthcare Logistics - Tecsys, infohub.tecsys.com/hubfs/Infographics/TECSYS-Hidden-Costs-of-Healthcare-Logistics-Infographic.pdf
8. Jennings, Adrian. “Hidden Costs of Missing Medical Equipment: Viewpoint.” OncLive, OncLive, 23 Aug. 2023, www.chiefhealthcareexecutive.com/view/hidden-costs-of-missing-medical-equipment-viewpoint