Smart Supply Chain: The Kanban Inventory Method

Why focus on purchasing behaviors?

When supplies go unused, hospitals are throwing out resources and money. By utilizing lean stocking methods and re-examining purchasing, health care facilities can become smarter shoppers and create less waste. The Kanban inventory method, a new way of maintaining supply inventories across departments, allows hospitals to efficiently track and reorder supplies.

Unnecessary Waste

- **250M** Pounds of unused pharmaceuticals discarded into water supplies by US health care facilities each year\(^1\)
- **5,332** Pounds of waste reduced by one medical center after reformulating operating room packs\(^2\)

Avoidable Costs

- **$600,000** Amount of money wasted on expired medical supplies identified in a supply chain audit at one hospital\(^3\)

Hospitals can reduce operating room waste through (1) better purchasing techniques such as OR kit reformulation, (2) new inventory methods, and (3) donating supplies to medical supply recovery organizations\(^4\)

How to Employ Kanban Method in Health Care Supply Chain\(^5\)

1. **Assess Supplies**
   - **Audit** supply rooms by examining use of each product
   - **Group and categorize** items according to frequency and type of use
   - **Divide** each supply item into two bins

2. **Optimize Quantities**
   - **Examine** average usage for each item to determine optimal supply quantities
   - **Estimate** supply stock for each item including a main supply in one bin of four days maximum and a one-day resupply in the second bin

3. **Implement RFIDs**
   - **Add** RFID cards to each pair of supply bins
   - **Place** an RFID reader in each room to automatically reorder supplies
   - **Train** staff to pull RFID cards when first supply bin runs out and drop cards in reader

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Radiofrequency Identification (RFID) is a replacement for barcodes in data acquisition and object identification\(^6\)

Check out the Health Care Sustainability Initiative’s white paper on surgical device exchanges.

Email sustainability@advisory.com to request this resource.

“For us, environmental sustainability is a philosophy and mindset that we weave into our lean efforts. We’ve used the sustainability movement to reinforce our preexisting lean efforts at the hospital.”

CEO, Alpena Medical Center

Average Savings Potential

- Average Savings Potential
- $250K—$750K

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How Kanban Inventory System Saves Time and Money

Why Kanban?
Par Level vs. Kanban Supply System

<table>
<thead>
<tr>
<th>How it works</th>
<th>Par Level</th>
<th>Kanban (Visual Two-Bin System)</th>
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<tbody>
<tr>
<td>• Par levels set for each item, i.e., how much should be available at any time</td>
<td>• Both bins filled to a set fixed quantity</td>
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<td>• When an item falls below par, it is replenished</td>
<td>• When one bin is empty, it is moved behind the full bin and a card is flipped on the bin</td>
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<td>• Empty bin signals to supply managers to refill to fixed quantity</td>
<td>• While waiting for refill, inventory pulled from other bin</td>
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Pros
• No implementation of a new system required

Cons
• Requires a regular, physical count of supplies
• Counting and restocking done daily, contributing to higher labor costs

Pros
• Requires fewer trips to supply room
• Reduced cycle counting lowers labor costs
• High reliability of maintaining adequate stock
• Efficient stocking system reduces waste of expired, unused products

Cons
• Requires a regular, physical count of supplies
• Counting and restocking done daily, contributing to higher labor costs
• If using RFID-equipped cards, increases capital and labor cost associated with implementing RFID system

In an RFID-equipped system, an RFID-enabled stock card is placed in front of each bin; when the last item in the primary bin is consumed, the user places the stock card in an intelligent “stock box” that automatically sends a request to the server for that item in that particular room.

Case in Brief: Nebraska Medicine – Bellevue

- 48% Reduction in time for clinician to obtain supplies
- 61% Reduction of inventory on hand
- 87% Reduction of clinician time in supply room

- 94-bed hospital, formerly known as the Bellevue Medical Center
- Implemented two-bin Kanban supply chain system in November 2012 in partnership with Cardinal Health
- Uses a cloud-based software that “learns” consumption patterns in real time, calculating appropriate bin quantities according to demand
- Clinicians agree that the two-bin Kanban system has made their jobs easier, made locating supplies they need easier, saves time, and enables clinicians to spend more time with patients
- Hospital plans to continue working with Cardinal Health to expand two-bin Kanban system beyond med-surg department to Labor and Delivery, Emergency Room, and Operating Room units

Striking a Balance: Buying in Bulk and Inventory Control

Buying in bulk reduces cost per item and wasteful packaging that ends up in the waste stream. Inventory control requires careful examination of which items the institution is buying in excess. Environmentally friendly purchasing and cost reduction requires a careful balance between the reduction of packaging, shipping, and waste impacts.

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