Managing Inventory
The Balancing Act

Karla Jackson
Regional Director
Quorum Purchasing Advantage

Define Inventory

**Noun**
Anything that is purchased and held prior to need or use

**Verb**
The act of counting something
As in: We are going to inventory the store room
Inventory Management

• The science of weighing the cost of inventory investment against the losses that accrue if the material is not available for immediate use

• A program for optimizing the productivity of inventory as a valuable, current asset

• Objective is to provide acceptable levels of service/supply continuity while maintaining low investment levels and carrying costs

Reasons for Inventory

• Protection against supply uncertainty (Heaven forbid a physician should ask for a supply item that is not available)

• A substitute for other costs

• Provide a high customer service level

• Effective materials logistics flow
Managing Inventory

• Why manage inventory
  • Reduce cost
  • Free up space
    o Other uses
    o More SKUs
  • Have supplies available
  • Have supplies accessible

Inventory Misconceptions

• It's possible to operate a facility without inventory
• Inventory does not serve a useful purpose
• We can't reduce our inventory
• Inventory level doesn't matter; we'll use it up
• We can stop ordering, “live off-the-shelf,” and, therefore, reduce our expenses
• Inventory is a hedge against inflation – "forward buying"
• Inventory reductions give a one-time increase in cash
Managing Inventory

Does Inventory Management = Inventory Reduction?

Inventory: Common Dilemma

Purchasing Costs or Acquisition Costs vs Holding Costs or Inventory Costs
Inventory Classifications

Official
Consumable supplies that are considered as current assets on an institution's balance sheet and expensed upon issue to the requesting department

Where do you usually find Official Inventory?

Inventory Classifications (Continued)

Types of Official Inventory

• **Perpetual** - the quantities and value on hand are maintained by adding receipts, subtracting issues to equal the new quantity on hand and inventory value

• **Non-perpetual** – the quantities on hand are a result of an inventory count and the inventory asset is placed on the books as a general ledger entry
Inventory Classifications (Continued)

Unofficial

Products that are expensed upon receipt and usually stored at the using department

Where do you usually find Unofficial Inventory?

Inventory Classifications (Continued)

Consignment

Products that are housed by the facility but "purchased" only when used

There is an unseen liability that few hospitals recognize or adequately manage
Financial Terms

• **Asset:** a thing of worth, owned by the facility

• **Current asset:** an asset that can be converted to cash within one year

• **Working capital:** A/R, inventory, cash, and near cash security

Inventory Valuation

Method by which the value of the inventory is determined for financial reporting purposes

**LIFO**

Last-In-First-Out (LIFO)

**FIFO**

First-In-First-Out (FIFO)

**Average Unit Cost**
Guidelines

• To relieve an asset account (INVENTORY)
  • the asset is transferred to another asset account, or
  • charged to an expense account

• Year-end physical inventory/perpetual monthly reconciliation

  Opening balance + purchases = Total available inventory
  - ending balance = Cost of Goods Sold

Inventory Management
Costs of Inventory

- Ordering costs
  - Sum of the fixed costs/physical activities that are incurred each time an item is ordered
  - Costs include:
    - Labor cost associated with processing order (salary and benefit costs of those involved with requisition of, approval, purchasing, receiving, invoice processing and vendor payment)
    - In some cases, may include portion of inbound freight

Costs of Inventory

- Carrying costs (costs associated with having inventory on hand)
  - Opportunity cost (cost of money)
  - Insurance cost (protection for inventory damage)
  - Taxes (required payment on inventory values)
  - Storage cost (all costs associated with warehousing product including utilities, space rental, warehouse labor)
  - Cost of obsolescence and shrinkage
Fundamental Accounting Principles of Inventory

• Additions to inventory
  ▪ Purchases made & received
  ▪ Adjustments

• Relief of inventory
  ▪ Requisitions
  ▪ Par level inventories
  ▪ Transfers between inventories
  ▪ Adjustments

• Accurate costing of inventory

Guidelines

Opening balance
+ purchases
- issues and transfers

Book value
- Physical inventory balance

Adjustment
Inventory Components Relationship to Inventory Value

• Greater the order quantity = larger inventory
• Longer lead time = larger inventory
• Higher safety stock = larger inventory

Basic Models and Techniques

1. ABC Analysis
2. Reorder Point/Fixed Order Quantity
3. Economic Order Quantity
ABC Analysis

Definition: the classification of inventory items into groups by annual dollar value of usage with all inventory items listed in descending order, from the highest annual dollar usage to the lowest

Requires a study of each item in terms of its price, usage, and lead time

Focuses on time and effort based on dollar value or activity

Reorder Point/Fixed Order Quantity

• An item is reordered when it falls below a specified level - reorder point is defined as the specific level

• This system recognizes that each item possesses its own unique optimum order quantity

• General rules:

  - Issues must be kept current
  - Receipts must be kept current
  - All stock items must be put away (on shelf) as received
### Reorder Point/Fixed Order Quantity

<table>
<thead>
<tr>
<th>Lead Time</th>
<th>Safety Stock</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Time it takes from recognizing a requirement until the item is ready to be delivered to the customer - order time, delivery time, receiving time</td>
<td>• Part of the inventory to guard against stock outs</td>
</tr>
</tbody>
</table>

### Economic Order Quantity (EOQ)

- EOQ = \( \frac{(2C \times D)}{K} \)
  - C = annual usage in units
  - D = order cost
  - K = unit price x carrying cost
- Incremental costs associated with an order quantity must be analyzed
  - Inventory carrying costs
  - Inventory acquisition costs
- Average carrying cost = 10 - 12%
- For $2M of inventory, the facility can have $40K in incremental costs
- Works best in predictable demand environments (manufacturing inventory management)
Advanced Models and Techniques

1. Just-in-Time (JIT)
   - Supplier ships product in bulk quantity on a more frequent schedule
   - Facility breaks down product and delivers to user
   - Minimal inventory at facility
   - Frequent deliveries by supplier
   - Generally has additional surcharge
   - Usually dependent on electronic processing
   - Why?
     - Reduce on hand inventory
     - Reduce carrying costs
     - Free up storage space

2. Stockless

3. Continuous Replenishment of Product (CRP)
Stockless

• Vendor holds and ships product in unit of issue
• May include delivery, and expensing, by "unit of issue" directly to the requisition department
• Minimal safety stock inventory stored at the facility
• Frequent deliveries by supplier
• Usually dependent on electronic processing

Key factors:
- Proximity of supplier
- Weather of locale and road access
- Emergency response time
- Frequency of deliveries

Continuous Replenishment of Product (CRP)

Supplier electronically pulls, on a scheduled basis, on-hand and usage information to create an order to purchaser, based upon minimum/maximums

Purchaser’s system electronically provides purchase order

Supplier automatically ships order on scheduled basis

Generally used by distributors with orders from their suppliers

Proprietary & Confidential
Appraising and Measuring Performance

Inventory Performance

- Appraising
  - Qualitative measurement
  - Customer satisfaction

- Measuring
  - Inventory indicators

- Reporting
  - Progress reports
  - Exception reports
  - Budgetary reports
**Inventory and Distribution Indicators**

- Inventory per adjusted patient day
- Inventory turnover
- Days supply on-hand

**Inventory Per Adjusted Patient Days**

Measures the inventory investment per adjusted patient days

\[
\text{Inv/Adj Pt Day} = \frac{\text{Inventory Value}}{\text{Adj. Patient Day}}
\]

\[
\text{Inv/Adj Pt Day} = \frac{\$100,000\ \text{Inventory}}{3,000\ \text{Adj. Pt. Day}}
\]

\[
\text{Inv/Adj Pt Day} = \$33.33
\]
**Inventory Turnover**

Measures the number of times inventory is consumed and replaced for a period of time

\[
\text{Inv Turns} = \frac{\text{Annual Supply Expense}^*}{\text{Total Inventory}}
\]

\[
\begin{align*}
\text{Inv Turns} &= \frac{\$450,000 \text{ Supply Expense}}{\$100,000 \text{ Official Inventory}} \\
- \text{Inventory Turns} &= 4.5
\end{align*}
\]

*For perpetual locations, use total issues instead of annual supply expense

**Days Supply On Hand**

Measures total number of days worth of inventory that is on-hand

\[
\text{DSOH} = \frac{365}{\text{Inventory Turnover}}
\]

\[
\begin{align*}
\text{DSOH} &= \frac{365}{4.5} \\
\text{DSOH} &= 81
\end{align*}
\]
### Financial Impact of Improving Inventory Turns

<table>
<thead>
<tr>
<th>Turns</th>
<th>Inventory $</th>
<th>Usage $</th>
<th>Inventory Savings $</th>
<th>Annual Holding Costs Savings at 20%</th>
<th>Total Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5</td>
<td>800,000</td>
<td>1,200,000</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2.0</td>
<td>600,000</td>
<td>1,200,000</td>
<td>200,000</td>
<td>40,000</td>
<td>240,000</td>
</tr>
<tr>
<td>2.5</td>
<td>480,000</td>
<td>1,200,000</td>
<td>320,000</td>
<td>64,000</td>
<td>384,000</td>
</tr>
<tr>
<td>3.0</td>
<td>400,000</td>
<td>1,200,000</td>
<td>400,000</td>
<td>80,000</td>
<td>480,000</td>
</tr>
<tr>
<td>4.0</td>
<td>300,000</td>
<td>1,200,000</td>
<td>500,000</td>
<td>100,000</td>
<td>600,000</td>
</tr>
</tbody>
</table>

### Additional Inventory and Distribution Indicators

- **Demand Accommodation**
  - A ratio (percent) of products required by a customer and those supplies maintained in inventory
- **Demand Satisfaction (Fill Rate)**
  - A more demanding measure is the ratio of only those items ordered vs. those filled - who determines if an item is filled
- **Material Throughput**
  - A measure of the time required to fill a requisition or process a receipt
Inventory (verb)

The method used to true up the BOOK VALUE with the actual ON-HAND VALUE

Physical Inventory

• Cycle counting
  • Accomplished by continuously selecting a specific subgroup of inventory items to count throughout the year so that, by year end, the entire inventory has been cycled through and counted

• Periodic counting
  • Accomplished at regular or predetermined intervals (usually at 6 or 12 months)
  • Usually accomplished by closing down the department and counting all inventories
Guidelines

Opening balance
+ purchases
- issues and transfers
Book value
- Physical inventory balance
Adjustment

Physical Inventory Impact

Booked (balance sheet) inventory is greater than physical inventory count results in an increase or decrease in expenses?

Physical inventory is greater than booked (balance sheet) inventory results in an increase or decrease in expenses?

Major inventory adjustments skew financials and impact facilities ability to manage budgets effectively
See Handout on Conducting an Inventory

Reasons for Inventory Variance

• Prices are not recorded properly
  ▪ As expensed....price lists not updated in a timely fashion
  ▪ Incorrect expense or asset account applied

• Shrinkage (items consumed but not expensed on requisition, theft, unsupervised counting of product, midnight nursing shopping)

• Unit of issue variance (relief of inventory in units different from purchase units)
Checklist of Inventory Errors

✓ Ineffective cutoff times
✓ Errors in posting to inventory records
✓ Missing receiving and shipping documents
✓ Product substitutions
✓ Confusion in the unit of measure
✓ Wrong SKU number printed on shipment and/or forms
✓ Blocked stock -- one product stored behind another
✓ Disposition without proper paperwork
✓ Pilferage

Optimizing Inventory
Steps to Managing Inventory

• Establish a strategic inventory management plan, based on usage and service expectations
• Establish inventory objectives
• Publish an inventory policy
• Apply inventory management methods
• Use appropriate inventory control techniques
• Monitor and measure performance
• Report results to management and co-workers

Optimizing Inventory

• Automate inventory management
• Centralize Inventory
  • Reduce redundant stocking
• Eliminate "D" items
• Implement LUM/JIT
  • Review stockless option
• Standardize items
**Steps to Managing Inventory Reducing Inventory**

- Establish realistic min/max quantities in the store room
- Critically review initial stock quantities for new items
- Critically review policy for stocking items
- Order more frequently
- Order in smaller units of measure
- Standardize where possible
- Reduce the number of vendors
- Identify slow moving items
- Work with the customer on usage patterns

**Excess Inventory**

**Identify Excess**

- MMIS reports
  - Transaction report
  - Turns report
  - Stock status
- Visual
**Excess Inventory**

**What to Do with Excess**

- Use it up
- Return to vendor
- Sell or trade to other facility
- Sell to third party retailer
- Donate to charity
- Trash

**Inventory Reports**

- Stock status report
- 80/20 or ABC report
- Excess stock or no transactions report
- Inventory adjustment report
- Price change report
- Recommended order report
Improving OR Inventory Management

Find out:

- Historical issues
- Needs vs. wants
- What specialties and services
- Key players
- Physical requirements or restrictions
Improving OR Inventory Management

• Know the budget and finance issues
  ▪ Inventory value
  ▪ Turn rate
  ▪ Operating budget
  ▪ Vendor relationships
  ▪ Financial relationship to the hospital
  ▪ Pricing and mark-up
  ▪ Patient charge processes

Improving OR Inventory Management

• Know the operations issues:
  ▪ Automation capabilities
  ▪ Policies and procedures that affect inventory
  ▪ ABC analysis of inventory
  ▪ GPO opportunities
  ▪ Consignment opportunities
  ▪ Waste and product disposal policies
Improving OR Inventory Management

• Work toward:
  ▪ Increased control and management of inventory by materials management
  ▪ Eliminate unofficial inventories
  ▪ Centralize supply locations (suture example)
  ▪ Evaluate request for new items
  ▪ Annual data driven review of par levels for min/max adjustments or product elimination
  ▪ Decrease inventory shrinkage

Questions
The Quorum Difference

The Quorum Difference is the extraordinary combination of consulting guidance and operations experience that enables client healthcare organizations to achieve a sustainable future.

THANK YOU

Intended for internal guidance only, and not as recommendations for specific situations. Readers should consult a qualified attorney for specific legal guidance.