Supply Chain Cost Reduction and Process Improvement: A Strategic Approach Through the Use of RFID Technology

SPEAKERS:
1.) William (Bill) A. Chapelle – Corporate Director of Supply Chain, Adventist Healthcare
2.) Aravind Sampath – Corporate Supply Chain Manager, Adventist Healthcare
CASE STUDY - OVERVIEW

I.) Strategic Goal Alignment – Overview of hospital strategic goals and alignment to the supply chain cost reduction initiatives.

II.) Supply and Spend Management at Cardiology Product Line – A Lean approach
I.) STRATEGIC GOAL ALIGNMENT

• Adventist Healthcare Inc is an integrated non-profit healthcare delivery organization with acute care hospitals, rehab hospitals, behavioral health hospitals and home health services in Maryland and New Jersey

• Four Year Strategic Financial Goal – A Level Bond rating metrics
  1. Increase days of cash on hand by 62%
  2. Decrease debt to capitalization ratio by 22%
  3. Increase excess margin by 28%
I.) STRATEGIC GOAL ALIGNMENT

• Supply Chain – Strategic Plan { Four Years }
  – Reduction of supply expense per adjusted admission annually by 4% for acute care hospitals
  – Reduction of supply expense as percentage of net operating revenue by 4% for non-acute care hospitals
  – Reduction of supply expense by more than $14 M over a period of four years across the system
SUPPLY EXPENSE REDUCTION SCORECARD—WAH

Supply Expense Per Adj Admission – WAH

SUPPLY EXP - % OF NET OP REVENUE

13.3 % Reduction
2009 VS YTD-2011

W A H

Estimated 2011 Cost Reduction: $1,412,221
Calculated Based on 3.5% reduction of YTD 2010 Supply Expense per Adj Admission and using patient volume from 2010.

- Med-Surg: $353,055 (25% of Total Cost Reduction)
- Drugs: $282,444 (20% of Total Cost Reduction)
- Prosthetics & Implants: $84,733 (6% of Total Cost Reduction)
- Cardio-Vascular & CRM: $522,522 (37% of Total Cost Reduction)
- Other: $169,467 (12% of Total Cost Reduction)

Total Medical Supply Expense (2010) = $ 49,877,416
Total Medical Supply Expense (2011) = $ 42,608,202
II.) STRATEGIC PLAN DEVELOPMENT

• Focus Hospital: Washington Adventist Hospital
• Strategic plan included specific projects and targets across different expense categories
  – Cardiology (37%)
  – Prosthetics and OR Implants (6%)
  – Drugs (20%)
  – Medical-Surgical (25%)
  – Others (12%)
• Project Areas Included,
  – Contract Re-negotiation
  – Inventory Reduction
  – Revenue Enhancement
  – Supply Chain Process Improvement
  – Value Analysis
III.) FOCUS AREA - CARDIOLOGY

• Expense Category – Cardiology
  – Approximate annual spend of $17 Million (37-40%)
  – Targeted 4 year savings > $ 2.5 Million
  – Coronary and Vascular Products (Cath Lab)
  – Electrophysiology and Cardiac Rhythm Mgmt Products

• Strategic Plan – Overview (2010)
  – Development of projects / kaizen events to address immediate cost savings opportunities
    • Implementation of contract negotiation and pricing strategies with development of custom spend management tools
    • Product Standardization
  – Comprehensive evaluation supply management practices to identify and implement a foundation for continuous improvement
<table>
<thead>
<tr>
<th>Item Category</th>
<th>VENDOR NAME</th>
<th>101</th>
<th>102</th>
<th>Total</th>
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<td>PO - QTY</td>
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<td>MarketShare - %</td>
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<td>Grand Total</td>
<td></td>
<td>511</td>
<td>$ 605,120</td>
<td>100.00%</td>
<td>1779</td>
<td>$2,533,720</td>
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III.) CARDIOLOGY SUPPLY MGMT

• DEFINE PHASE - Developed a project scope and plan to identify cost savings in pricing, inventory reduction and product utilization. Included the following product categories,
  1. Coronary product line – Drug-eluting stents, Bare metal stents, Balloons, Guide wires, Guide catheters, diagnostic catheters and many other products
  2. Peripheral product line – peripheral self-expanding and balloon expanding stents, balloons, Guide wires and many others
  3. CRM – Bulk-buy devices including pacemakers and others

• Developed a set of metrics and baseline
  1. Stent Expense / Coronary Interventional Procedure
  2. Number of Stents / Coronary Interventional Procedure
  3. Balloon Expense / Coronary Interventional Procedure
  4. Number of Balloons / Coronary Interventional Procedure
  5. Inventory value of high dollar physician preference items
III.) CARDIOLOGY SUPPLY MGMT

- ASSESSMENT-Mapped the current state supply management processes at the Cath Lab and identified opportunities for improvement through definition of desired future state. Key process areas include,
  1. Storage and Distribution
  2. Product usage capture and clinical documentation
  3. Charge capture and billing
  4. Inventory & Consignment Management
  5. Business intelligence for spend management, profit margin assessment, inventory management and others.
5 Cath Labs / 2 EP Labs
30 + Interventional Cardiologists

1800 + Interventional Procedures / 2800 + Diagnostic Procedures / 1200 + EP Procedures

70 + Stocking Locations

3000 + SKU’s (PPI Only)

Annual Spend > $7 MILLION

Manual processes for,
- Inventory Management
- Return to Vendor
- Product Expiry Tracking
- Charge Capture

Physician Pressure / Fear of Stock-Out

Inventory Pile-Up

Increased Cost per procedure and reduced margin

Shrinkage / Expiring Products / Wastage

1 FTE – 260 Days / Year
$13 / Hour
IV.) GAP ANALYSIS – STORAGE / DISTRIBUTION

**CURRENT STATE**

- Multiple storage locations with no clear labeling of product codes, par levels and other information. Decentralized stocking locations with multiple duplicate locations for the same item.
  - RESULT: Difficulty in finding products, risk of stock-outs and non-value added time spent on counting items to determine order quantity

**FUTURE STATE**

- Lean 5S study completed. Redesigned storage layout with RFID enabled cabinets and centralized locations for most of the products. Real-time location information for products located at multiple areas.
  - RESULT: Increased physician satisfaction due to ease of product availability and elimination of non-value added time spent on counting products.
V.) GAP ANALYSIS – PRODUCT USAGE CAPTURE / CLINICAL DOCUMENTATION

**CURRENT STATE**

- Lack of electronic data capture of product, physician, patient and procedural information. Also, non-value added step to manually documentation product usage in the Cath Lab CVIS system.
  - RESULT: Lack of any business intelligence to drive supply chain excellence. Increased non-value added time spent by the clinical staff

**FUTURE STATE**

- Real-time electronic data capture of all information in the cath lab through creation of patient encounter and use of RFID point of use scanner. Also, real-time interface of clinical documentation to the Cath Lab CVIS system.
  - RESULT: Availability of valuable business intelligence for decision making. Elimination of non-value added activity for manual documentation in the CVIS system
VI.) GAP ANALYSIS – CHARGE CAPTURE / BILLING

**CURRENT STATE**

- Manual process to fill-out paperwork on products used during a procedure (clinical staff) and charge entry into the billing system (analyst).
  - RESULT: Non-value added activity to fill out the billing sheet and charge entry.

**FUTURE STATE (In-Progress)**

- Automatic ADT interface from CERNER with patient encounter details. Automatic interface to the billing system as the products get scanned at the point of use RFID scanner.
  - RESULT: Accurate and automatic interface of supply charges at the point of use.
VII.) GAP ANALYSIS – INVENTORY & CONSIGNMENT MGMT

CURRENT STATE

- Manual process to manage product inventory of more than 3000 SKU’s located at 70+ stocking locations
- Limitations to count products at periodic intervals with no standard order count sheets and par-levels.
- Increased lead-time from time the product was used until it is replenished as result of inefficient workflows.
- Inefficient management of product expiry dates

FUTURE STATE

- Elimination of all non-value added manual steps involved in counting products on the shelf and ordering them in PeopleSoft. Use of Wavemark online application for managing inventory.
- Interface between Wavemark and ERP system (PeopleSoft) for automatic creation of E-Pro requisition
- Manage expiry dates, stock-out alerts through the use of dashboards in the Wavemark system.
VIII.) GAP ANALYSIS – BUSINESS INTELLIGENCE

**CURRENT STATE**

- Lack of information on cost per procedure, vendor market share and physician product usage information.
- Lack of any intelligence on product demand useful to design par-levels, reorder points, etc.

**FUTURE STATE**

- Availability of multiple levels of intelligence in WAVEMARK including,
  - Vendor market share by product type
  - Physician market share
  - Physician product utilization
- Product usage information by Cath lab room or location
- Real-time dashboard with availability product expiry, stock-out and other clinical alerts.
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<th>IMPROVEMENT AREA</th>
<th>TECHNOLOGY USED</th>
<th>SOLUTION PROVIDER</th>
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<td>1.) Storage and Distribution</td>
<td>-RFID Cabinets with various configurations - Passive RFID tags</td>
<td>WAVEMARK</td>
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<td>2.) Product Usage Capture / Clinical Documentation</td>
<td>-RFID Point of Use Scanners and software application - Interface between software application and CVIS information system.</td>
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<td>-RFID Point of Use Scanners and software application - ADT Interface between CERNER and software application - Billing interface between software application and CERNER</td>
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<td>4.) Inventory / Consignment Mgmt</td>
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<td>5.) Business Intelligence</td>
<td>- Robust business intelligence through reports and dashboards available in the software application</td>
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X.) RESULTS - OVERVIEW

1.) Reductions of inventory of items tracked in Wavemark by 15% as compared to the baseline

2.) Annual Savings from price reduction and utilization improvement of Coronary products greater than $750,000

3.) CRM / Vascular product line – Project in progress with estimated savings greater than $1 Million

4.) Potential opportunity to include Electrophysiology products including ablation catheters and other products

• Reduction of resources required to manage supplies with possible reduction of 1 FTE.
**Stent Expense (DES and BM) / Interventional PCI**

- YTD-2010 = $2,366
- YTD-2011 = $2,012
- 15% Reduction

**Coronary Balloon Expense / Interventional PCI**

- YTD-2010 = $431
- YTD-2011 = $315
- 26.9% Reduction

**Number of Stents (DES and BM) / Interventional PCI**

- YTD-2010 = 1.52
- YTD-2011 = 1.48
- 2.63% Reduction

**Savings (YTD - 2011)**

$563,530
XI.) DEMAND BASED PROCUREMENT
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Thank You