Creating Value within the Supply Chain

Agenda

- EBOLA & Nebraska
- Background
- Traditional Supply Chain
- Project Objectives
- Why Outsource?
- Scope of Operations
- Sources of Variability Impacting Operations
- Best Practices
- Metrics/Results
EBOLA & Nebraska

- Certified Bio-Containment Unit
- 10 Beds (largest in the country)
- 24,000 infected in Africa (Sierra Leone, Guinea & Liberia)
- 10,000 have died (40% mortality rate)

The NEBRASKA EBOLA METHOD

- http://www.nebraskamed.com/biocontainment-unit/ebola
Ebola courses for the general public and clinicians

- What to do in the emergency department with a possible Ebola patient
- Considerations for infection control
- Transporting patients with Ebola
- Testing and Transport of Laboratory Samples
- Clinical Care of an Ebola Patient
- Managing Ebola Virus Contaminated Medical Waste
- Biological PPE: Ebola – Donning
- Biological PPE: Ebola – Doffing
- Ebola PPE Checklist
- Triage Suspected Ebola Positive Travel Screening Algorithm
- Ebola Best Practices
- Biocontainment Unit Staff Selection

Customer Overview – Nebraska Medicine

- Licensed Beds – 621
- Operating Rooms – 33
- Inpatient Admissions – 24,557
- Average Daily Census – 360
- Average Length of Stay – 5.3 days
- Emergency Room Visits – 50,794
- Outpatient Visits – 427,726
- 16,189 Surgical Cases
- GPO: Med Assets
- Supply Spend: $70 – $75M/yr
Customer Overview — Bellevue Medical Center

Bellevue Medical Center — Opened May 17, 2010

- Licensed Beds -- 91
- Operating Rooms – 8
- Inpatient Admissions – 3,983
- Average Daily Census – 34.6
- Average Length of Stay – 3.98 days
- Emergency Room Visits – 28,489
- Outpatient Visits – 58,049
- GPO: Med Assets
- Est. Supply Spend: $5.5M/yr

Traditional Supply Chain

Customer order | Product delivery | Central store | Departments
Customer order products electronically | Products are delivered to customer dock/receiving | Customers place product in central store | Products get distributed to individual departments | Clinician use

Did you know?

- 50% of departmental inventory is inactive*
- 10% of inventory expense is obsolete*
- 25% of clinical staff time is spent on supply chain activities*
- Stock-outs and other examples of redundancy, variation and unnecessary steps... contribute to the 74% of time nurses spend outside the patient’s room meeting administrative responsibilities*
- Inventory represents as much as 25% of the typical hospital's operating budget**

*Cardinal Health benchmarking model, 2013 inventory APR database
**Gale, Robert K. 'Pathways to Profit: The 4-Step Strategy for Reforming Supply Chain Performance.'
Consequences of a Traditional Supply Chain

- Critical supply locations unknown
- Manual ordering, receiving, picking and sorting
- Lack of timely replenishment at point of use
- Stock-outs
- Expired supply costs
- Unrealized charge capture
- Delayed or postponed procedures
- Increase in stat turn-around time
- Duplicate products and price parity
- Decreases overall patient care

Why Outsource???
Reasons for Outsourcing

• Clinical Labor vs. Non-Clinical Labor
• Focus on Core Business
• Improved Service
• Frees up Internal Resources
• Efficiency
• Flexibility
• Peace of Mind

Original Project Objectives

• Outsource non-core functions (i.e. supply chain)
• Protect and sustain the financial strength of core business
• Improve service to clinical operations and patients
• Gain better accountability of supplies being purchased
• Optimize the use of technology and data
• Create a business plan that aligns incentives
• Contribute to the continuum of patient safety
• Clinical retention of product selection
• Dock to patient distribution
Scope of Cardinal Partnership

**Vision**
Wherever possible, leveraging emerging technology will be essential for successful implementation of our strategies.

**Strategy**
Leverage Cardinal Health’s industry leading scale and expertise to deliver state of the art processes and efficiencies that support patient care from manufacture to patient bedside.

<table>
<thead>
<tr>
<th>Product</th>
<th>Process</th>
<th>People</th>
<th>Technology</th>
<th>Finance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vendor Owned</td>
<td>Supply Spend Analytics</td>
<td>Supply Techs</td>
<td>Point of Use Audibility</td>
<td>Inventory Reconciliation</td>
</tr>
<tr>
<td>-Distributed and Non-stock</td>
<td>Contracting</td>
<td>Accounts Payable</td>
<td>Optimize Inventory</td>
<td>Billing Based on Usage</td>
</tr>
<tr>
<td>Quantity</td>
<td>Purchasing</td>
<td>Dock Personnel</td>
<td>Reduce Touchpoints</td>
<td>Single Monthly Invoice</td>
</tr>
<tr>
<td>Market Intelligence</td>
<td>Supply Distribution</td>
<td>Contracts</td>
<td>Item File Management</td>
<td>Aligned Incentives</td>
</tr>
<tr>
<td></td>
<td>Inventory Control</td>
<td>Purchasing</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Storeroom Management</td>
<td>Transparency</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Patient Focused Supply Chain

**Demand Flow**
- Point of Care
- Floor
- Storage

**Product Flow**
- Manufacturer
- Distributor/Wholesaler
- Contracts / Purchasing
Attack Sources of Variability to Improve Predictability

Precision

4 test results fall in the same area but miss the bullseye

Seasonal Impact

Summer
Winter
Flu
**Patient Census**

Fluctuating patient census
- Ramp up clinical staff
- Seasonal staff

**Clinical Practice**

- Lack of standardization
- Diseases treated differently
Demographics

“Lean” Mentality

• Grocery stores adapted to a lean model
• Just-in-time inventory (logical unit-of-measure)
Freight Management

- Freight has become a profit center for manufacturers
  - Hidden in price of product
- Operating Room should be focal point
  - Next-day delivery
  - Transportation budget managed elsewhere
- Unit price vs total delivered cost

Number of Suppliers

- More invoices
- More time spent ordering
- More time unloading trucks
- More cost
Manual Cycle Counting

- No Value-Add in Counting
  - 50% Materials Management Time?
- Too Many Mistakes
  - UOM Issues
  - Fat Finger
- Correct Cycle Count Frequency?
  - Weekly, Monthly, Quarterly
  - NEVER?

Our Take On Some Common Metrics

<table>
<thead>
<tr>
<th>Rank</th>
<th>Tracking Methods</th>
<th>Our Thoughts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good</td>
<td>Total Supply Expense as a % of Net Patient Revenue</td>
<td>• Variability in Net Patient Revenue distorts month over month trends</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Does not effectively illustrate true supply spend performance</td>
</tr>
<tr>
<td>Better</td>
<td>Total Supply Expense Per Adjusted Discharge or CMI</td>
<td>• Better aligns supply spend with patient volumes and level of acuity</td>
</tr>
<tr>
<td></td>
<td>Adjusted Discharge</td>
<td>• Does not capture supply spend performance at the patient level</td>
</tr>
<tr>
<td>Best</td>
<td>Supply Intensity Score</td>
<td>• Measures supply costs by patient and procedure type</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Provides more precise and actionable data</td>
</tr>
</tbody>
</table>
### Are You Measuring The Right Metrics?

- Every hospital measures similar benchmarks
  - But your waste is hiding in what you’re not measuring

<table>
<thead>
<tr>
<th>New metrics to track</th>
<th>Improvement Opportunity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expired Supplies</td>
<td>• How much are you expiring out each month?</td>
</tr>
<tr>
<td></td>
<td>• These are products that could have been returned, redeployed, or even resold.</td>
</tr>
<tr>
<td>Lost Products (Leakage)</td>
<td>• How much product is missing each month?</td>
</tr>
<tr>
<td></td>
<td>• Leakage can be mitigated with enhanced tracking and inventory controls.</td>
</tr>
<tr>
<td>Clinical time spent on supply chain (HCAPS)</td>
<td>• How much clinical time is spent on finding stocked out supplies, logging in/out of POU systems, or recording takes/returns?</td>
</tr>
<tr>
<td></td>
<td>• This represents time could have been spent with the patient.</td>
</tr>
</tbody>
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What it takes to be successful...

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Successful Initiatives

• Standardization of Products
  – Reduction in SKU’s
• Consolidation of Departments
  – PCE (Patient Care Equipment) / MMS (Medical Materials)
• Expired Reduction
  – Proactive Focus
• Discrepancy Reduction
• Job Standardization
• Cross Training
• Product Storage Profiling (Pick path)
• Supply Storage Management (Automation necessary)

Stock to Stock Cycle Time Reduction

Run Chart of Average

Minutes to first put-away

<table>
<thead>
<tr>
<th>Observation</th>
<th>Average</th>
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<tbody>
<tr>
<td>1</td>
<td>70</td>
</tr>
<tr>
<td>2</td>
<td>60</td>
</tr>
<tr>
<td>3</td>
<td>50</td>
</tr>
<tr>
<td>4</td>
<td>40</td>
</tr>
<tr>
<td>5</td>
<td>30</td>
</tr>
<tr>
<td>6</td>
<td>20</td>
</tr>
<tr>
<td>7</td>
<td>10</td>
</tr>
<tr>
<td>8</td>
<td>0</td>
</tr>
</tbody>
</table>

| Number of runs above median | 4 |
| Expected number of runs    | 9.6 |
| Longest run above median   | 6 |
| Approx P-Value for Outliers | 0.05*
| Approx P-Value for Reference | 0.05* |

| Number of runs up or down  | 9 |
| Expected number of runs    | 18 |
| Longest run up or down     | 4 |
| Approx P-Value for Trends   | 0.33 |
| Approx P-Value for Outliers | 0.79 |

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Best Practice Recommendations

Expiration Expense as a percentage of Total Supply Spend (Medical/Surgical/Laboratory)
- 3-5% is Industry Standard

Discrepancy Expense as a percentage of Total Supply Spend (Medical/Surgical/Laboratory)
- 3% or less is Best in Class

Expiration as a % of Total Supply Spend

<table>
<thead>
<tr>
<th>FY09</th>
<th>FY10</th>
<th>FY11</th>
<th>FY12</th>
<th>FY13</th>
<th>FY14</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.99%</td>
<td>0.91%</td>
<td>1.47%</td>
<td>0.85%</td>
<td>0.89%</td>
<td>0.75%</td>
</tr>
</tbody>
</table>

Expiration Rate on Spend

Total Medical/Surgical/Laboratory Supply Expense

<table>
<thead>
<tr>
<th>FY09</th>
<th>FY10</th>
<th>FY11</th>
<th>FY12</th>
<th>FY13</th>
<th>FY14</th>
</tr>
</thead>
<tbody>
<tr>
<td>$57,868,302.00</td>
<td>$62,925,906.00</td>
<td>$62,067,711.00</td>
<td>$61,258,511.00</td>
<td>$62,527,862.00</td>
<td>$78,821,792.00</td>
</tr>
</tbody>
</table>
There is no place like Nebraska…GO BIG RED!

Thank you!