Materials Management and Production Processes

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Major Questions and Challenges

- What processes and systems are we considering?
- What kinds of materials?
- What is the frame?
  - Process and quality improvement?
  - Improvement across the value chain?
- What organizations?
  - Delivery (physician offices, hospitals, nursing homes...)
  - Suppliers, Distributors, Group Purchasing
- What can we transfer from other industries?
Need For A Definition of the Supply Chain

❖ Products
❖ Information
❖ Money
❖ Risk
Evidence Based Supply Management

1. Eliminate Products that Destroy Value
2. Manage marginal product lines
3. Recognize Clockspeed & Modularity Of Procedures
4. Adjust Number & Complexity of products Through Evidence Based Medicine, Management & Change

Modified from A.T. Kearney
What is our Vision?

- Efficient and effective supply chain
- Understands the value of materials as:
  - Assets – providing value to patients
    - Comparative effectiveness link
    - Great outcomes
  - Assets – providing value to providers
  - Transparent
  - Contributing to value based purchasing
Focused Factories vs Integration
Mayo or Hospital For Special Surgery?

- Silos constitute communities
- Silos are difficult to topple
- Silos are difficult to integrate
- Silos have strong cultures
- Service line silos can gain efficiency
- Treat them like focused factories
- Use them as internal models
- Structure incentives within silos
- Understand the incentives
The 6 Roads to Supply Choice:
The Shifting Customer
Use if Web 2.0 and Beyond

- Restructure relationships between people, products and processes.
- Respect for Tacit Knowledge
- Respect for Autonomy
Evidence is Problematic to the Implant Surgeon

- (i) they believe that EBM marginalizes patient involvement in decision-making
- (ii) they believe that EBM-generated knowledge is useful and is commonly used in daily clinical decision-making – however, not using EBM does not adversely affect their daily clinical decision-making;
- (iii) they have high confidence in their own judgment compared with low confidence in clinical practice guidelines and other sources of evidence; and (iv) journal summaries of the latest research related to a subject are the most useful resources in clinical practice ..”

Internal Barriers

- over-specification of the product and service by both the supplier and the physician
- premature establishment of the product specification
- frequent changes in the design and specification of the product
- poor demand management and information
- fragmentation of spend and maverick purchasing
- inter-departmental power and politics
- the risk adverse nature and culture of the hospital and clinician.

Incentives & Evidence
Interact with Ability to Re-Engineer

- Gainsharing
- Value-based purchasing
- Resource Dependencies
The Idea of Supply Intensive Admissions

- Over 50 DRGs
  - Supply cost + OR = > 50% cost
  - Rarely well managed
  - Strong resource dependency on suppliers, distributors, etc.
### What Are the Supply Intensive DRGs

62 DRG’s >50% Supply & OR

<table>
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<th>DRG</th>
<th>Definition</th>
<th>% Supplies and OR</th>
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<tr>
<td>515</td>
<td>Cardiac Defibrillator Implant w/o Cardiac Cath</td>
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<td>Spinal Fusion Except Cervical</td>
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<td>491</td>
<td>Major Joint &amp; Limb Reattachment</td>
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<td>Carotid Artery Stent Procedure</td>
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<td>GI Hemorrhage</td>
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<td>300</td>
<td>Endocrine Disorders</td>
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<td>139</td>
<td>Cardiac Arrhythmia &amp; Conduction Disorder</td>
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Advanced Technology
Intra-operative CT and Computer Aided Surgery
Evidence Based Supply Chain

- Willingness to manage supply cost and risk
- Use of DRG and procedure level data to drive decisions.
- Establishment of “managerial epidemiology”
- Respect for bounded clinical autonomy
- Build commitment
- Manage conflict of interest
  - involve physicians who request new products in the analysis
  - exclude them from the decision
Why Are These Relationships So Difficult?

- Strong physician preferences for products, particularly in high technology fields such as orthopedics and interventional cardiology.
- Physician preference for products but payment for products by the hospital.
- Third-party reimbursement.
- Rapidly changing technology.
- Inherent market differences based on physician availability, patient mix, managed care penetration, systems of reimbursement, and level of competition between hospitals.
- Tendency for purchasing to be transactional rather than strategic.
- Lack of price transparency. (ref-LS &GS book and more)
1. Structural Changes

✓ Demographic
✓ Economic
✓ Personalized Medicine
✓ Econoimics
✓ Rebalancing shifts in demand
2. Structure Of The Existing Supply Chain

- How to make it better
- Understanding of risk and reward
- Supply chain risk management
- Driving incentives
3. Theoretical & Applied Research Technology Transfer

✓ Social/Technical Systems
✓ Technology Transfer
✓ Bring clinical and data standards for SC together
✓ Map availability of common data
4. Connecting Supply Chain and Patient Care

- Use of information for management
- Help providers to do a better job
  - Efficiency & Productivity
  - Behavioral dynamics with MD
Tools/Techniques

- Systems dynamics
- Design Science
- Contracting/Agency Theory
- Resource Dependency
Considerations

- Role and Impact of Policy
- Supply chain resilience
- Existing talent/competencies/capabilities
- Unintended consequences
  - Low inventory/distribution efficiency/disaster preparedness
Barriers

- Data
- Transparency
- Registry
- Uniform product identification
- Differences in Clockspeed
Leveraging Data

- Cost Accounting
- Materials Management (item master)
- Chargemaster and pricing
- Consistent and regular physician meetings
- Value analysis for new technology
- 100% prospective bill audits

Source – NOH at ASU Dissemination Conference
Tensions in Practice

- Hospital protocols
- Formularies
- Product standardization
- Payor formularies
- Substitution of pharmaceuticals
- Physician report cards that may be tied to reimbursement
- Preauthorization
- Denial of certain services
- Information on the net
- Direct-to-consumer advertising
- Declining reimbursements
- Rising overhead
- Malpractice climate
- Decision-making by non-physicians
- Posting of hospital costs by procedure
Enterprise Perspective on Supply Chain Performance

**Arcs of Integration**

- **Internal Operations**
  - Improve Effectiveness
  - Increase Productivity

- **Customer/Stakeholder Relationships**
  - Improve Value
  - Increase Satisfaction

**Trading Partners**
- Improve Integration
- Reduce Price

**GPO**
- Distributor
- Manufacturer
- Exchange

**Patient**
- Physician
- Caregiver
- Payer
- “C” Suite

**Exchange**
- **GPO**
- Distributor
- Manufacturer

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