Modernization of Supply Chain Management in Hospital Authority, Hong Kong
Agenda

• Background of Hospital Authority, Hong Kong
• Supply Chain Management Framework
• “Better Practices” Adopted
• Key Success Factors
Hospital Authority, Hong Kong

(US$1=HK$7.8)

• A statutory body established on 1 December 1990, managing all public hospitals in Hong Kong with ~54,800 staff

• 41 public hospitals/institutions, 48 specialist clinics and 74 general clinics (in 7 clusters)

• 27,117 hospital beds in all public hospitals, with ~83% bed occupancy
  (~3.8 hospital beds per 1,000 population)

• Total expenditure in 2008/09 ~HK$35.2 Bn
  (~75% staff cost, ~11% medical supplies and equipment, ~14% other operating expenses)

• Priority areas in service planning
  • Acute and emergency care
  • Services for the low income group and the underprivileged
  • Illness that entail high cost, advanced technology and multidisciplinary professional teamwork in their treatment
  • Training of healthcare professional

Source: HA Annual Plan 2009/10 & Strategic Service Plan 2009-2012)
Hospital Authority, Hong Kong

**Vision**
Healthy People, Happy Staff, Trusted by the Community

**Mission**
Helping People Stay Healthy

**Values**
- People-centred Care
- Professional Service
- Committed Staff
- Teamwork

**“SMARTER” Care**
- Safe
- Measurable
- Accessible
- Relevant
- Timely
- Enabling
- Respectful

**Patient Safety**
- Safe Culture
- Safe Design
- Safe Process
Service Throughput in 2008/09 & Targets for 2009/10

- Inpatient & Day-patient Discharge Episodes: 1.254 (2008-09), 1.278 (2009-10)
- A & E Attendances: 2.103 (2008-09), 2.133 (2009-10)
- Primary Care Attendances: 5.011 (2008-09), 5.017 (2009-10)
- Community Outreach Visits: 1.606 (2008-09), 1.694 (2009-10)

* Estimated figures
** Activity targets (Projected figures)

Source: HA Annual Plan 2009/10
Hong Kong’s Healthcare Status

One of the healthiest places in the world ...

<table>
<thead>
<tr>
<th>Life Expectancy (Years)</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aus</td>
<td>79.0</td>
<td></td>
</tr>
<tr>
<td>Japan</td>
<td>85.5</td>
<td></td>
</tr>
<tr>
<td>HK</td>
<td>78.8</td>
<td>84.6</td>
</tr>
<tr>
<td>Japan</td>
<td>83.1</td>
<td></td>
</tr>
<tr>
<td>UK</td>
<td>76.6</td>
<td>81.1</td>
</tr>
<tr>
<td>USA</td>
<td>75.3</td>
<td>80.4</td>
</tr>
</tbody>
</table>

2036 projected
Male - 82.7
Female - 88.3

<table>
<thead>
<tr>
<th>Infant Mortality Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hong Kong</td>
</tr>
<tr>
<td>Japan</td>
</tr>
<tr>
<td>Australia</td>
</tr>
<tr>
<td>United Kingdom</td>
</tr>
<tr>
<td>United States of America</td>
</tr>
</tbody>
</table>

Source: Healthcare Reform Consultation Doc in 2008
Population aging will increase demand of HA Service

Expected over 40% increase in population aged 80 and above by 2016

Distribution of HK population and HA patient days by age (2007 vs 2016)

Source: HA Annual Plan 2009/10 & HA Strategic Service Plan 2009-2012
Health Service Expenditure as Percentage of GDP

\[ 5.35\% = 2.80\% + 2.55\% \]

GDP  Public  Private

As of 2005
Source: (1) Census and Statistics Department
(2) OECD Health Data 2005
Supply Chain Management Framework
HA’s Purchase Expenditure in 2008/09
(exclude construction works)

(US$1=HK$7.8)

- **Drugs**: HK$2,797M (32%)
  - HK$1,695M (19%)
  - HK$584M (7%)
  - HK$40M (3%)

- **Medical Consumables**: HK$640M (7%)
  - HK$1,117M (12%)

- **Equipment**: HK$1,695M (19%)
- **General Consumables**: HK$584M (7%)
- **Other Specific**: HK$304M (3%)
- **Repair & Maintenance**: HK$1,117M (12%)
- **Administration & Services**: HK$1,828M (20%)

Total: HK$8.96 Billion
(~ 53% via bulk contracts)
Bulk Procurement of Medical Consumables
(Country of Origin)

Year 2008

- **Japan**
  - HK$ 14.46M (4%)
- **Singapore**
  - HK$ 20.08M (5%)
- **Malaysia**
  - HK$ 30.48M (7%)
- **Europe**
  - HK$ 56.29M (14%)
- **China**
  - HK$ 57.99M (14%)
- **Other Countries**
  - HK$ 13.45M (3%)
- **Other Asian Countries**
  - HK$ 8.76M (2%)
- **Australia**
  - HK$ 5.87M (1%)
- **Hong Kong**
  - HK$ 0.59M (0%)
- **USA**
  - HK$ 204.78M (50%)
Supply Chain Management Structure

Head Office Level (45 staff)

- Procurement Team A
  Non-Medical & IT Supplies
- Procurement Team B
  Nursing Care & OT Supplies
- Procurement Team C
  Services & Laboratory Supplies
- Procurement Team D
  Medical Devices & Supplies
- Procurement Team E
  Pharmaceutical Supplies
- IT Service Procurement Team
  e- Health Record

Cluster Level (373 staff)

- Hong Kong East Cluster Procurement Unit
- Hong Kong West Cluster Procurement Unit
- Kowloon East Cluster Procurement Unit
- Kowloon Central Cluster Procurement Unit
- Kowloon West Cluster Procurement Unit
- New Territories East Cluster Procurement Unit
- New Territories West Cluster Procurement Unit

Three-tier staff structure
Professional: 12 staff
Managerial: 71 staff
Operational: 335 staff
Delineation of Roles

**Head Office Level**

- **Procurement Planning**
  - Policies and guidelines formulation
  - Setting standards

- **Product Standardization**
  - Product standardization
  - Bulk contracting
  - Tendering support
  - Suppliers partnership

- **Performance Monitoring and Review**
  - Order cycle planning

- **Risk and Information Management**

**Cluster/Hospital Level**

- **Risk management**
  - Business
    - Product safety
    - Product traceability

- **Systems development**

- **Inventory control/logistics support**

- **Vendor performance monitoring**
Procurement Management Framework
(before 2002)

**SUPPLY CHAIN ORGANIZATION**

- **Purchasing & Materials Management Functions**
  - Procurement planning
  - Product standardization
  - Contract administration
  - Inventory management
  - Product tracking & tracing
  - Product recall & safety alert
  - Quality assurance
  - Spend analysis
  - Supplier base rationalization
  - Risk management
  - Procure-to-pay

**RESULTS / TARGETS**

- **Performance Measurement**
  - Spend savings
  - Inventory level / SKU
  - Stock turnover
  - Manpower ratios
  - Product discrepancy & recall reports
### Supply Chain Organization

**Corporate**
- Vision
- Mission
- Value
- Safe Culture

**Governance**

**Leadership**

**People**
- Head Office Procurement
- 7 Cluster Procurement Units
- 41 hospitals/institutions ~3700 receipt locations

**Procurement Policy & Strategy**
- Strategic sourcing
- Product classification and codification
- Supplier relationship
- International quality / safety standards

**Stakeholder Engagement**
- Clinical interface
- Hospital relationships
- Cross-functional interfaces
- Suppliers etc.

**Information Platform**
- ERPS
- Product T&T
- EDI

### Results / Targets

**Performance Measurement**
- Spend savings
- Inventory level / SKU
- Stock turnover
- Manpower ratios
- Product discrepancy & recall reports

**Product Safety & Quality**
- Along whole supply chain
- Cross-functional

**Efficiency & Flexibility**
- Procurement planning
- Product standardization
- Contract administration
- Inventory management
- Product T&T
- Product recall & safety alert
- Quality assurance
- Spend analysis
- Supplier base rationalization
- Risk management
- Procure-to-pay

**Stakeholder Satisfaction**
- Patients
- Staff
- Public
- Suppliers
- Government

**Social Responsibility**

**Supply Risk Management**

Feedback & Review
**HA Procurement Vision**

“To establish value-for-money and seamless supply chain operation with maximal risk management”

<table>
<thead>
<tr>
<th>Challenges</th>
</tr>
</thead>
<tbody>
<tr>
<td>(from 2002</td>
</tr>
<tr>
<td>- Pressure to cut costs</td>
</tr>
<tr>
<td>- Fragmented information about spend</td>
</tr>
<tr>
<td>- “Maverick” purchases</td>
</tr>
<tr>
<td>- Too many suppliers</td>
</tr>
<tr>
<td>- Lacking specialized sourcing skills</td>
</tr>
<tr>
<td>- Quality discrepancies</td>
</tr>
<tr>
<td>- Managing change</td>
</tr>
</tbody>
</table>

- Pressure to cut costs
- Quality discrepancies
- Managing change
- New Corporate Culture:
  - Safe Culture, Safe Design, Safe Practice
Supply Chain to the Bedside

Quality Patient Care & Safety

- Safe Culture
- Safe Practice
- Safe Technology
- Safe Design

Healthcare Delivery

- Appropriate technology selection and standardization
- Clinical Interfaces
- Purchasing controls and efficiency (e-procurement)
- Inventory management
- Vendor Collaboration

Supply Management

- Strategic development of supply chains
Modernization of Supply Chain Management
(HA’s journey since 2002)

Efficiency
- Product quality
- User interface
- Spend savings
- Data integrity
- Hidden costs (activity cost / lead time)

Security
- Process control
- Management accountability
- Data security

Traceability
- Product safety / recall
- Information transparency & sharing
- Integrated data down to patient level

“Total Solution” for general supplies
VMI on OT supplies
Consignment for Cardiac devices
Request listing of high-risk devices in MDACS*
Consignment for O&T implants

<table>
<thead>
<tr>
<th>Year</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ISO9001</td>
<td>New</td>
<td>PT&amp;T</td>
<td>PCC</td>
<td></td>
<td>RFID</td>
<td>ERPS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>structure on category management</td>
<td>roll-out</td>
<td>model</td>
<td></td>
<td>pilot</td>
<td>roll-out</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(* MDACS – Medical Device Administrative Control System managed by Department of Health, HKSAR)
“Better Practices” Adopted

Product Classification & Codification (PCC)
Enterprise Resource Planning System (ERPS)
Product Tracking & Tracing (PTNT)
Product Classification & Codification (PCC)
### Product Classification & Codification (PCC) Model

<table>
<thead>
<tr>
<th>Classification (UNSPSC)</th>
<th>Drugs</th>
<th>Medical Devices / Consumables</th>
<th>Non-Medical Devices / Consumables</th>
</tr>
</thead>
<tbody>
<tr>
<td>(INN)</td>
<td>(UMDN/GMDN)</td>
<td>(AUSLANG)</td>
<td></td>
</tr>
</tbody>
</table>

**Procure to Pay**

#### Item Classification
- United Nation Standard Product and Services Code (UNSPSC)

#### Item Description Nomenclature
- Drugs : International Non-proprietary Name (INN)
- Medical Device / Consumables :
  - Primary - Universal Medical Device Nomenclature (UMDN)
  - Secondary - Global Medical Device Nomenclature (GMDN)
  - Non-Medical Device/Consumables : AUSLANG

#### Product Identification Standard :
- GS1 (previous EAN) / Health Industry Bar Code Standards (HIBC)
Survey of Market Readiness – PCC Model
(July 2009)

• Inadequate awareness of HA’s accelerated requirement on PCC standards
• Existence of data language problems in 50-60% of products supplied to HA
• Around 40% of existing products already barcoded on EAN standards
• Inadequate and diverse knowledge on barcoding and capability to incorporate standards
Directions on PCC and Supplier Engagement

• Adopt one single nomenclature standard i.e. UMDN for medical devices
  – dovetail with the Department of Health’s Medical Devices Administrative Control System (MDACS)
  – from “voluntary” to “compulsory”

• Apply the GS1 System of coding standards
  – accelerate implementation through bulk leverage and long-term contracts

• Assess the impact from implementation of territory-wide electronic Health Records
Enterprise Resource Planning System (ERPS)
Implementation of Enterprise Resource Planning System

**Supply Chain Management**
- Catalogue, Procurement Plan and Execution, Inventory Control

**Financial Management**
- General Ledger, Accounts Payable, and Fixed Asset Management

**Human Capital Management**
- Staffing, Payroll, and Benefits Administration
Enhanced Decision Support

Past Focus
- Reactive
- Confrontational
- Fragmented
- Labour intensive

New Focus
- Strategic
- Embedded
- Integrated
- Streamlined & Automated

Integrated “Procure-to-Pay” Process
## ERPS Implementation Results
Measurable improvements in procurement performance

<table>
<thead>
<tr>
<th></th>
<th>Before ERPS</th>
<th>After ERPS</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Procurement Costs</strong></td>
<td>HK$93.54 /PO</td>
<td>HK$60.22/PO</td>
<td><strong>Reduced by 35.6%</strong></td>
</tr>
<tr>
<td><strong>Compliance on Controls</strong></td>
<td>Manual control with limited automation</td>
<td>Automated control with built-in segregation of duties</td>
<td><strong>100% automated</strong></td>
</tr>
<tr>
<td><strong>Electronic Purchases</strong></td>
<td>EDI PO only (~2%)</td>
<td>Autofax (67.4%) Auto-email (28.9%) EDI PO (3.7%)</td>
<td><strong>100% automated</strong></td>
</tr>
<tr>
<td><strong>PR / PO Processing Cycle Time</strong></td>
<td>PR : 4.57days PO : 9.82days</td>
<td>PR : 3.77days PO : 7.11days</td>
<td><strong>PR : reduced by 17.5% PO : reduced by 27.6%</strong></td>
</tr>
<tr>
<td><strong>Data Integrity</strong></td>
<td>Fragmented system and databases</td>
<td>New PCC model</td>
<td><strong>Integrated databases</strong></td>
</tr>
<tr>
<td><strong>Supplier Base Rationalization</strong></td>
<td>~15,000no.</td>
<td>~10,000no.</td>
<td><strong>Reduced by 33%</strong></td>
</tr>
</tbody>
</table>
Product Tracking & Tracing (PTNT)
**Product Tracking and Tracing (PTNT)**

**End-to-end Process**

- **Patient consumption**
- **Communication with supplier**
- **Payment process**
- **Product recall / alert**

**System Automation**

- Capture patient consumption through barcode scanning
- Communication with supplier through EDI
- System automated payment process
- System facilitated product recall
## Technologies and Standards

<table>
<thead>
<tr>
<th>Real Time Data Exchange through EDI using EANCOM</th>
<th>Inventory Management</th>
<th>Product Tracking and Tracing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inventory</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Global Trade Item Number (GTIN)</td>
<td>Barcode (GTIN/HIBCC)</td>
<td>GTIN, GLN and Lot Number to facilitate product tracking and tracing</td>
</tr>
<tr>
<td>• Global Location Code (GLN)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Purchase Order</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• GTIN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• GLN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advanced Shipping Information</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• GTIN/GLN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Lot Number</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Expiry Date</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Survey of Market Readiness – Barcode & EDI Adoption
(July-September 2009)

• 30.9% response rate (47 respondents)
• Limited influence on packing decisions
  – Majority of the respondents are distributors
• Almost 50% of SKUs of suppliers already labeled with barcode at different packaging levels
  – Mostly at retail pack level
  – Mainly (78%) in EAN/UCC

• Key concerns on barcode implementation
  – Labeling cost/effort (37%)
  – Difficulty in mandating manufacturer to add barcode (21%)
  – Risk on relabeling by distributor (13%)
  – Delay introduction of product (12%)
  – Technical difficulty (11%)
Survey of Market Readiness – Barcode & EDI Adoption
(July-September 2009)

• 27 EDI vendors in HA
  – Cover both general and medical consumables
  – Over 352,000 PO lines a year with total value over HK$5.8 Bn
  – 1st e-PO/Invoice vendor in September 2009

• Suppliers mainly using EDI service from EZ*Trade

• Key suppliers’ concerns on EDI implementation
  – EDI set-up and maintenance cost/effort
  – Capability of computer system
  – Capability of staff
Directions on PTNT Applications

- **Continue to drive barcode adoption in healthcare products especially on the “point-of-use” level to facilitate T&T at consumption level**

- **Further engage suppliers and increase EDI applications**

- **Extend PTNT implementation for monitoring usage of “Single Use Devices”**
### Catalogue Item - Detail

<table>
<thead>
<tr>
<th>Item Code</th>
<th>Group ID</th>
<th>Status</th>
<th>Unit of Measure</th>
<th>Type</th>
<th>Interface To AMS</th>
<th>PPMI Indicator</th>
<th>Standby</th>
<th>Mission Critical Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>1131087</td>
<td>SCISSORS_ENDOSURGERY</td>
<td>ACTIVE</td>
<td>PR</td>
<td>SERVICE</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
</tbody>
</table>

**Single Use Device**: NO

**FDA Classification**: NO

**Reprocessing Number**: NO

### UNSPSC Code
- Code: 42254906
- UNSPSC Description: ENDOSCOPIC CUTTING INSTRUMENTS

### Default Commodity
- Code: CC0105 - SPEC MED/SURG:CONSUMABLES

### Item Description
- SCISSORS, ENDOSURGERY: CURVED SCISSORS, 5MM DIA X 340MM LG, STERILE, REUSABLE

### To Be ICC

<table>
<thead>
<tr>
<th>Sequence</th>
<th>Template</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>DESIGN</td>
<td>CURVED SCISSORS</td>
</tr>
<tr>
<td>20</td>
<td>DIMENSION</td>
<td>5MM DIA X 340MM LG</td>
</tr>
<tr>
<td>30</td>
<td>STERILITY</td>
<td>STERILE</td>
</tr>
</tbody>
</table>
Development on Clinical Applications of Supply Chain Technologies

- **2-D Barcoding for Patient Identification**
  - Blood transfusion
  - Body identification from ward to mortuary
  - Beside printing of label for all investigation specimens (partial roll-out)
  - Pharmacy dispensing / medication administration (under deliberation)

- **RFID Pilot Projects**
  - Asset management
  - Baby tagging
  - Mortuary management
  - Patient monitoring (under deliberation)
Key Success Factors to Supply Chain Modernization
## Key Success Factors

<table>
<thead>
<tr>
<th>Internal</th>
<th>External</th>
</tr>
</thead>
</table>
| • Leadership support and willingness to take risks  
• Effective governance  
• Stakeholders and users buy-in  
• Plan strategically but act realistically  
• Strong “Change Management” underpinned by business-driven process reengineering  
• Penetration of knowledge and skills through “Train-the-Trainers”  
• “Evolution” and not “Revolution” | • Stakeholders’ capabilities and collaboration  
• Accurate and timely update of information from suppliers (product set-up / recall / alert)  
• Systems compatibility and interoperability  
• Standards and norms  
• Government regulatory  
• Global data harmonization |
Old man replied, “After I die, there are my son, my grandson, and their sons and grandsons etc. Even though these two mountains are tall, they won’t get any taller. If we dig a little, there will be a little less. Why can’t we keep digging until it is flat?”
### Key Success Factors

<table>
<thead>
<tr>
<th>Internal</th>
<th>External</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Leadership support and willingness to take risks</td>
<td>• Stakeholders’ capabilities and collaboration</td>
</tr>
<tr>
<td>• Effective governance</td>
<td>• Accurate and timely update of information from suppliers (product set-up / recall / alert)</td>
</tr>
<tr>
<td>• Stakeholders and users buy-in</td>
<td>• Systems compatibility and interoperability</td>
</tr>
<tr>
<td>• Plan strategically but act realistically</td>
<td>• Standards and norms</td>
</tr>
<tr>
<td>• Strong “Change Management” underpinned by business-driven process reengineering</td>
<td>• Government regulatory</td>
</tr>
<tr>
<td>• Penetration of knowledge and skills through “Train-the-Trainers”</td>
<td>• Global data harmonization</td>
</tr>
<tr>
<td>• “Evolution” and not “Revolution”</td>
<td></td>
</tr>
</tbody>
</table>
### Key Success Factors

<table>
<thead>
<tr>
<th>Internal</th>
<th>External</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Leadership support and willingness to take risks</td>
<td>• <strong>Global data harmonization</strong></td>
</tr>
<tr>
<td>• Effective governance</td>
<td>- Stakeholders’ capabilities and collaboration</td>
</tr>
<tr>
<td>• Stakeholders and users buy-in</td>
<td>- Accurate and timely update of information from suppliers (product set-up / recall / alert)</td>
</tr>
<tr>
<td>• Plan strategically but act realistically</td>
<td>- Systems compatibility and interoperability</td>
</tr>
<tr>
<td>• Strong “Change Management” underpinned by business-driven process reengineering</td>
<td>- Standards and norms</td>
</tr>
<tr>
<td>• Penetration of knowledge and skills through “Train-the-Trainers”</td>
<td>- Government regulatory</td>
</tr>
<tr>
<td>• “Evolution” and not “Revolution”</td>
<td></td>
</tr>
</tbody>
</table>
Integration & Optimization Challenges

Are we communicating?
Shall we co-operate?
Can we collaborate?
How can we integrate?
Do we want to optimize?
Thank You