Modernization of Supply Chain Management in Hospital Authority, Hong Kong

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Hospital Authority, Hong Kong
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◆ Healthcare System in Hong Kong

◆ Procurement & Supplies Management in Hospital Authority, Hong Kong

◆ Modernization of Procurement & Supplies Management in Hospital Authority

◆ Global Issues
Healthcare System in Hong Kong

- Overview of Hong Kong
- Healthcare Status
- Healthcare Service Delivery
- Healthcare Expenditure
Hong Kong

- Hong Kong is a Special Administrative Region of the People’s Republic of China
- Southern gateway to the Mainland China located at the Pearl River Delta facing South China Sea
- Area 1,104km² (Japan: 377,873km²)
- Comprising HK Island, Kowloon Peninsula, the New Territories, Lantau Island and 260 other islands
Hong Kong

- Population 6.93Mn (Japan: 127.79Mn) 95% are Chinese
- A tourist/shopping centre, ~25Mn visitors a year. Around 30°C in Summer and 17°C in Winter
- One of the leading financial centres
- Per capita GDP HK$0.23Mn (2007)

source: HK Yearbook 2007
### Healthcare Status

**One of the healthiest places in the world (2005)......**

#### Life Expectancy (Years)

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aus</td>
<td>79.0</td>
<td>85.5</td>
</tr>
<tr>
<td>HK</td>
<td>78.8</td>
<td>84.6</td>
</tr>
<tr>
<td>Japan</td>
<td>78.7</td>
<td>83.1</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*

#### Infant Mortality Rate

<table>
<thead>
<tr>
<th>Country</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hong Kong</td>
<td>2.4/1,000</td>
</tr>
<tr>
<td>Japan</td>
<td>2.8/1,000</td>
</tr>
<tr>
<td>Australia</td>
<td>5.0/1,000</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>5.1/1,000</td>
</tr>
<tr>
<td>United States of America</td>
<td>6.9/1,000</td>
</tr>
</tbody>
</table>

*Source: Healthcare Reform Consultation Doc in 2008*
## Healthcare Status

### Leading Causes of Death in HK (2006)

<table>
<thead>
<tr>
<th>Rank</th>
<th>Leading Cause</th>
<th>Death Rate (per 100,000 population)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Malignant neoplasms</td>
<td>176.4</td>
</tr>
<tr>
<td>2</td>
<td>Diseases of heart</td>
<td>81.9</td>
</tr>
<tr>
<td>3</td>
<td>Pneumonia</td>
<td>61.3</td>
</tr>
<tr>
<td>4</td>
<td>Cerebrovascular diseases</td>
<td>48.2</td>
</tr>
<tr>
<td>5</td>
<td>External causes of morbidity and mortality</td>
<td>28.6</td>
</tr>
<tr>
<td>6</td>
<td>Chronic lower respiratory diseases</td>
<td>28.1</td>
</tr>
<tr>
<td>7</td>
<td>Nephritis, nephrotic syndrome and nephrosis</td>
<td>18.8</td>
</tr>
<tr>
<td>8</td>
<td>Septicaemia</td>
<td>9.9</td>
</tr>
<tr>
<td>9</td>
<td>Diabetes mellitus</td>
<td>7.5</td>
</tr>
<tr>
<td>10</td>
<td>Chronic liver disease and cirrhosis</td>
<td>5.3</td>
</tr>
</tbody>
</table>

Source: HA Statistical Report
Three-level Healthcare Delivery Structure

**Primary Care**
- Private Doctors: 56%
- Chinese Medicine Practitioners: 20%
- Public Doctors: 24%

**Secondary and Tertiary Care**
- Hospital Authority: 92.8%
- Private Hospitals/Doctors: 7.2%

**Extended and Long Term Care**
- Hospital Authority: 100%

As of 2005
Healthcare Expenditure

Health Service Expenditure as Percentage of GDP

As of 2005
Source: (1) Census and Statistics Department
(2) OECD Health Data 2005
Healthcare Expenditure Forecast

2004 public health expenditure:
- About $38 billion

2015 projected public health expenditure:
- About $78 billion

2025 projected public health expenditure:
- About $127 billion

Source: Healthcare Reform Consultation Doc in 2008
Procurement & Supplies Management in Hospital Authority, Hong Kong

- Overview of Hospital Authority
- Delineation of Roles and Responsibilities in Procurement & Supplies Management
- Vision in Procurement & Supplies Management
• A statutory body established on 1 December 1990, managing all public hospitals in Hong Kong with ~52,690 staff

• 40 public hospitals in 7 clusters, 48 specialist clinics and 75 general clinics

• 27,633 hospital beds in all public hospitals, with overall occupancy at 82%
  ( ~3.8 hospital beds per 1,000 population )

• Total expenditure in 2007/08 ~HK$32.7 Bn (~US$4.2Bn)
  (~74.8% staff cost, ~11.3% Medical supplies and equipment, ~13.9% other operating expenses)

• New Government Directions
  • Strengthened support for chronic diseases
  • Public-Private Partnership Healthcare Services
  • Territory-wide patient-oriented electronic health record system
Distribution of Public Hospitals in HK
HA Purchase Expenditure 2007/08
(exclude construction works)

Total: HK$8.6Bn (~US$1.1Bn)
Delineation of Roles and Responsibilities

**Corporate**

- **Procurement Planning**
- **Product Standardization**

- **Policies and Guidelines Formulation and Setting Standards**
- **Product Standardization**
- **Bulk Contracting**
- **Tendering Support**
- **Suppliers Partnership**

- **Risk Management**
  - Business
  - Product safety
  - Product traceability

- **Systems Development**

**Clusters/Hospitals**

- **Performance Monitoring and Review**
- **Risk and Information Management**

- **Order Cycle Planning**
- **Tendering/Purchasing Support**
- **Bulk Contracting**

- **Inventory Control/Logistics Support**

- **Vendor Performance Monitoring**
Procurement & Supplies Strategies in HA

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

- Business Transformation
- Partnership with Stakeholders
- Staff Training and Education
- Change Management
- Hospital Relationship Management
Modernization of Procurement & Supplies Management in Hospital Authority, Hong Kong

- Objective and Key Targets
- Development Directions
- Product Codification & Classification (PCC)
- Product Tracking & Tracing (PTNT)
Modernization Objective

- Quality Patient Care & Safety
- Healthcare Delivery
- Supply Management
- People & Skills
- Equipment & Supplies
- Procedures & Processes
- Systems & Structure
- Strategic development of supply chains
- Continuous Healthcare Technology Assessment
- Technology Adoption and Clinical Interfaces
Modernization Key Targets

- **Efficiency**
  - High product safety
  - User interface and satisfaction
  - Saving in price
  - Saving in operational cost
  - Reduction in lead time

- **Security**
  - Process control and accountability
  - Data security
  - Segregation of roles/duties

- **Traceability**
  - Sharing of information
  - Product recall
  - Integrated data management down to patient consumption level
## Development Directions

### Global Sourcing
- Bulk Contracts (with Technology Substitution) - Solution Tenders

### Outsourcing of Non-Core Activities
- Office Supplies & Cleansing Materials - Equipment & Facility Maintenance
- Domestic & Support Services

### Suppliers Collaboration
- Vendor Managed Inventory (VMI) for Operation Theatre Supplies
- Consignment Stock for Medical Consumables
- Public Private Partnership Project for Food Services

### Integrated Data / Information Platform
- EDI - Product Codification & Classification (ERP)

### Risk Management
- Corruption Prevention - Critical Supplies - Product Tracking & Tracing
**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
HA-Centric
Product Codification & Classification (PCC) Model

Management Reporting

<table>
<thead>
<tr>
<th>Classification (UNSPSC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drugs</td>
</tr>
<tr>
<td>Medical Devices / Consumables</td>
</tr>
<tr>
<td>(INN)</td>
</tr>
<tr>
<td>Non-Medical Devices / Consumables</td>
</tr>
<tr>
<td>(UMDN/GMDN)</td>
</tr>
<tr>
<td>(AUSLANG)</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:**
European Article Number (EAN) / Health Industry Bar Code Standards (HIBC)
Drugs
INN - International Non-proprietary Name

The World Health Organization devised the International Non-proprietary Name (INN; also known as rINN, for recommended International Nonproprietary Name) system.

INN facilitates the identification of pharmaceutical substances or active pharmaceutical ingredients.

Each INN is a unique name that is globally recognized and is public property.
Medical Devices
Primary: UMDN – Universal Medical Device Nomenclature System™ (UMDNS) is a standard international nomenclature and computer coding system for medical devices.

It is used in thousands of healthcare institutions worldwide and in ECRI’s databases and publications.
Medical Devices
Secondary: GMDN – Global Medical Device Nomenclature

The Global Medical Device Nomenclature (GMDN) provides a standardized method for describing and identifying medical devices in an unambiguous manner, and has been adopted by an increasing number of regulatory authorities worldwide.

The GMDN is built according to the internationally recognised standard (EN ISO 15225).

GMDN is adopted in the Medical Device Administrative Control System (MDACS) program of the Department of Health, Hong Kong Special Administrative Region.
Non-Medical Devices
AUSLANG – Australian Supply Language

Auslang’s nomenclature is inherited from the North Atlantic Treaty Organization (NATO) Codification System.

The NATO System is a well documented and very comprehensive system for cataloguing.
HA-Centric Product Codification & Classification (PCC) Model

International / Local Standards Compliance

- Support UNSPSC
- Support EAN & HIBCC
- Adopt UMDN & GMDN

HA-centric PCC Model

Supplier Engagement

- Support data sharing
- Support item data maintenance by supplier (e.g. model, UOM, packing size)

Operation Management

- Facilitate data analysis and e-Procurement development
- Enhance inventory management and data alignment

Risk Management

- Facilitate response and management of product recalls (through better batch control and brand / model identification)
HA-Centric
Product Codification & Classification (PCC) Model

**International / Local Standards Compliance**
- Support UNSPSC
- Support EAN & HIBCC
- Adopt UMDN & GMDN
- Support Global Data Synchronization

**Operation Management**
- Facilitate data analysis and e-Procurement development
- Enhance inventory management and data alignment
- Standardize and streamline business processes

**Supplier Engagement**
- Support data sharing
- Support item data maintenance by supplier
- Support electronic communication with supplier

**Risk Management**
- Facilitate response and management of product recalls
- Facilitate role-based data access
PCC & ERP Development Roadmap

- **2004**
- **2006**
- **2008**
- **2010**
- **2012**
- **Beyond..**

**PCC Model**

- PCC Model Development (GS1 consultancy)

**Medical Consumables and Equipment + Non-Medical**

**Drugs**

**ERP Implementation**

**GDS**

Global Data Synchronization
Global Data Synchronization (GDS) グローバル・データ同期化

Streamline Data Exchange with Suppliers via Industry Standard
業界標準を通じて、サプライヤとのデータ交換をスムーズに行う

↑ Suppliers Collaboration サプライヤの協働
↑ Healthcare Providers Collaboration 医療機関の協働
“Real leadership and commitment are required if we are to fight a problem that can affect every patient in the world and to reduce the appalling costs of unsafe care. It is needed to draw on the strengths and contributions of all parts of society through broad-based partnerships.

And it is instrumental to mobilizing national and international knowledge and resources on a scale far greater than we have so far.”

(Director-General, WHO 2003-2006)
Product Tracking & Tracing in HA

End-to-end PTNT process

Patient consumption → Communication with supplier → Payment process → Product recall

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 Electronic Data Exchange (EDI) using EANCOM</th>
<th>Inventory Management</th>
<th>Product Tracking and Tracing</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Inventory</strong>&lt;br&gt;▪ Global Trade Item Number (GTIN)&lt;br&gt;▪ Global Location Code (GLN)</td>
<td>Barcode (GTIN/HIBCC) to facilitate data capturing&lt;br▪ Issuing&lt;br▪ Receiving&lt;br▪ Stocktaking</td>
<td>GTIN, GLN and Lot Number to facilitate product tracking and tracing</td>
</tr>
<tr>
<td><strong>Purchase Order</strong>&lt;br▪ GTIN&lt;br▪ GLN</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Advanced Shipping Information</strong>&lt;br▪ GTIN/GLN&lt;br▪ Lot Number&lt;br▪ Expiry Date</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
✓ **Enhancement in traceability and efficiency**
  - Improve product traceability
  - Enhance patient safety
  - Streamline procure-to-pay process
  - Reduce errors
  - Enhance communication
  - Improve inventory management

**Efficiency**  **Security**  **Traceability**
HA’s Journey in Product Tracking and Tracing (PTNT)

Product Traceability

2004 2005 2006 2007 2008 2009...

PTCA Consumables
HK$5.8Mn (US$0.7Mn) 5,000 Items

O&T Implants
Milk Supplements
Medical Equipment and Devices

HK$250Mn (US$32Mn) 30,000 Items

Adoption of Traceability Tools
(EDI, Barcoding, ERP and RFID)
HA’s Journey in Product Tracking and Tracing (PTNT)

2004 2005 2006 2007 2008 2009..

**Internal Strategies**

- Clinical staff engagement
- Change management and staff training
- Adoption of PCC and data cleansing

**External Strategies**

- New contracting arrangement
- Market engagement in EDI and bar-coding requirement and training
Global Issues

- Technology Adoption
- Collaboration
The supply side
Gartner’s emerging technology hype cycle 2008

visibility
- Inventory Strategy Optimization
- Network-Based Inventory and Supply Chain Management
- Dock Scheduling and Carrier Appointment Management
- Master Data Management of Product Data, Formerly Product Information Management
- Mobile (Wireless) Supply Chain Management
- Direct-POS Analytics Applications

- Warehouse Labor Management Systems
- TMS Multimodal/Domestic Service Parts Planning
- Integration as a Service Business Process Hubs
- Supply Chain Analytics
- Voice-Directed Picking in Warehouse Management
- Multienterprise Supply Chain Collaboration
- Capable-to-Promise Systems
- RFID and Sensor-Based Inventory Management
- Global Data Synchronization

As of August 2008

<table>
<thead>
<tr>
<th>Technology Trigger</th>
<th>Peak of Inflated Expectations</th>
<th>Trough of Disillusionment</th>
<th>Slope of Enlightenment</th>
<th>Plateau of Productivity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Years to mainstream adoption:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>O less than 2 years</td>
<td>○ 2 to 5 years</td>
<td>● 5 to 10 years</td>
<td>△ more than 10 years</td>
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</tbody>
</table>
Global Data Synchronization (GDS) グローバル・データ同期化

Streamline Data Exchange with Suppliers via Industry Standard

↑ Suppliers Collaboration サプライヤの協働
↑ Healthcare Providers Collaboration 医療機関の協働
Two mountains blocked the way to the old man’s house.

He decided to move the mountains with hoes.

His whole family joined the digging.

Comment, “This is an unavoidably foolish endeavor!”
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?”
We need commitment and co-operation amongst all stakeholders in the Healthcare Supply Chains

Thank You