The Hong Kong Hospital Authority and GS1 Hong Kong advise:
How to start implementation of standards in hospitals?

Ms S C Chiang,
BPharm, MRPS, MHA, FACHSM, FHKCHSE, FCPP
Senior Pharmacist
Chief Pharmacist’s Office
Hospital Authority, Hong Kong
scchiang@ha.org.hk
Some of our hospitals in Hospital Authority Hong Kong (HAHK)
Our out-Patients waiting to be served at different pharmacies at our hospitals
Magnitude of our **daily** business transactions in all HA pharmacies in 2013

<table>
<thead>
<tr>
<th>Transaction types</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of Dispensed <strong>Items</strong></td>
<td>215,000</td>
</tr>
<tr>
<td>No. of Dispensed <strong>Prescriptions</strong></td>
<td>66,000</td>
</tr>
<tr>
<td>No. of <strong>Patients</strong> Served</td>
<td>58,000</td>
</tr>
<tr>
<td>No. of <strong>Suppliers</strong> dealt with</td>
<td>60</td>
</tr>
<tr>
<td>No. of <strong>Purchase Orders</strong> made</td>
<td>845</td>
</tr>
<tr>
<td>Dollar value of <strong>Stock items</strong> received in HK$</td>
<td>36M</td>
</tr>
<tr>
<td>No. of <strong>stock items</strong> involved in stock receipts</td>
<td>1,600</td>
</tr>
<tr>
<td>No. of <strong>Pharmacy Stores for Stock Receipt/ issue</strong></td>
<td>80</td>
</tr>
<tr>
<td>No. of <strong>Stock Movements</strong> in these stores</td>
<td>2,400</td>
</tr>
</tbody>
</table>
Ever wonder what is happening at the backend of in our pharmacy stores serving the hospitals, SOPC & GOPC?

- Where do our drugs come from?
- How to control and monitor the movement of drugs
- What are the logistics in stock receipts?
- What are the processes?
- How to track and trace the Supply Chain?
The ordering and delivery processes in our HA pharmacies

External: From Suppliers (>200)

Internal: At Pharmacy stores (>100) in 7 clusters
The overall situation about our pharmacy stores (too many, too small ...... manual processes.....) before 2009
## Drug distribution from pharmacy stores to dispensing areas (as it used to be)

<table>
<thead>
<tr>
<th>Pharmacy main stores</th>
<th>Manual entry of lot no. with expiry date – record only</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharmacy working stores (for dispensing to out &amp; in-patients &amp; issue to wards)</td>
<td>No functionality to enable track and trace lot no. &amp; expiry information</td>
</tr>
</tbody>
</table>
There are some major issues in our methods of doing things

We need a face lift!
Need to improve Quality, Safety and Efficiency in drug distribution/medication use

From manufacturers / distributors

Into pharmacy stores

Out from pharmacy stores

Into dispensing areas

To point of care / patient areas

150 suppliers

42 hospitals

100 pharmacies

80 Stores

500 wards

Description of the Major Supply Chain Processes

Industry

Logistics provider

Healthcare facility

Production

- Product design
- Purchase of raw materials
- Manufacturing
- Quality control
- Packaging
- Storage
- Distribution

Manufacturing - Preparation

- Quality control
- Inventory management
- Production planning
- Warehouse management
- Distribution

Shipping

- Loading
- Transportation
- Unloading

Receiving

- Inspecting
- Storing

Healthcare Delivery

- Packaging
- Distribution
- Receiving
- Storage

- Administration
- Patient care

- Compliance
- Billing

- Data management
- Feedback

- Continuous improvement

Suppliers

- Purchasing
- Inventory management
- Production planning
- Quality control
- Packaging
- Transportation

Hospitals

- Receiving
- Storage
- Dispensing
- Administration

Pharmacies

- Receiving
- Audits
- Inventory management
- Prescription

Stores

- Receiving
- Storage
- Dispensing
- Customer service

Wards

- Receiving
- Medical records
- Prescription
- Administration

Point of care / patient areas

- Prescriptions
- Distribution
- Administration

- Medical records
- Prescription
- Administration
in March 2009 HA announced – The Key Initiatives to enhance pharmaceutical products’ procurement system

6. Enhance the HA’s Pharmaceutical IT systems to improve controls by moving progressively towards:
   • introducing bar coding
   • automatically check what is received against what was ordered
   • automatically tract and trace drugs to the point of issue and
   • prevent dispensing of expired items
Major Milestones for the SCM project in 2009 - 2010

- Applying the funding from the Government
  - approval obtained from HK Government
  - looking around for suitable solution provider
  - chosen Mobile Supply Chain Application from Oracle
  - Learnt about the subject
  - Visited distributors in Hong Kong, China & Japan
  - Surveyed on vendor readiness & bar code status
  - Engaged a Consultant to review the overall situation and made recommendation on Road Map on SCM for HA – short, medium and long term measures
The Hospital Authority of Hong Kong (HA) has set the following goals for the SCM project:

1. Operational efficiency
   - To enhance speed of operation by replacing manual work processes with system and technology aided processes
   - To improve the accuracy of information capturing in all trading documents during a procurement cycle
   - To automate the validation procedures during goods receipt processes
   - To shorten the operation time of goods receipt processes
The Hospital Authority of Hong Kong (HA) has set the following goals for the SCM project:

2. Traceability of pharmaceutical products
   • To uniquely identify
     A. the logistic units received by HA with serial number
     B. the received drugs with ID number and batch number
     C. the drugs suppliers
     D. the locations of the hospitals
   • To link the received logistic unit to the batch number of the drug contained within
   • To collect and record traceability information accurately and completely in a timely manner
The achievement made in SCM project as of April 2014

Some facts and statistics about the magnitude of the Supply Chain Modernisation (SCM) Project in the Hospital Authority Hong Kong as at Dec 2013

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>The total number of public hospitals implemented with the SCM system</td>
<td>42</td>
</tr>
<tr>
<td>The total number of goods receiving points in these 42 hospitals</td>
<td>136</td>
</tr>
<tr>
<td><strong>Average daily number of Purchase Orders (PO) raised at these 136 goods receiving points</strong></td>
<td>436</td>
</tr>
<tr>
<td><strong>Average daily number of EDI Purchase Orders (PO)</strong></td>
<td>229</td>
</tr>
<tr>
<td>(52.5% of total PO)</td>
<td></td>
</tr>
<tr>
<td><strong>Average daily number of deliveries by EDI ASN from Batch I vendors</strong></td>
<td>717</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Batch I * <em>(live run in June 2012)</em></th>
<th>The total number of vendors engaged in the SCM project</th>
<th>The total number of pharmaceutical product items allocated with GTIN</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>14 *</td>
<td>2448</td>
</tr>
<tr>
<td>(54.61% of total products)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Batch II vendors <em>(live run in April 2014)</em></td>
<td>13**</td>
<td>436</td>
</tr>
<tr>
<td>(9.73% of total products)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Provide answers to some questions on the SCM project

• Why do we need to transform the Healthcare Supply Chain on pharmaceutical products?
• What were the problems in the system?
• How did we do it?
• What challenges did we encounter?
• What was the outcome?
How did we do it?

The implementation plan consisted of 2 parts:

1. Planning

A. Management Endorsement and communication

• The project lead of HA sought management buy-in of the project to secure the necessary resources, such as additional manpower and support from pharmacy department and IT department for the implementation.

• As the project covered all the 41 public hospitals in

• Hong Kong, the project lead had to communicate with the management as well as the pharmacy staff in each hospital for their support to accept and work together to achieve the new changes.
Leadership & Project Governance

• **Central level**
  - User Resource Group (URG)
    - Chaired by Cluster Service Director at Headoffice level
    - members from project team & clusters representatives
    - define project plan & monitor progress
    - allocate resources, prioritise issues & make decision on direction
    - deal with concerns from system vendor and users

• **Cluster level**
  - 7 Cluster Implementation Project Resource Groups
    - each Chaired by Cluster Chief Executives
    - members from hospital administrators, finance and pharmacy
    - meet quarterly to report & monitor progress of implementation
How did we do it?
Defining the scope of the Supply Chain Modernisation Project
How did we do it?
Communication and engagement

<table>
<thead>
<tr>
<th>External</th>
<th>Internal</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HKGS1:</strong></td>
<td><strong>Hospital side:</strong></td>
</tr>
<tr>
<td>- Technical guidelines</td>
<td>- Management buy in</td>
</tr>
<tr>
<td>- industry standards on ASN, SSCC, GTIN, GLN</td>
<td>- Support services</td>
</tr>
<tr>
<td><strong>Pharmaceutical vendors:</strong></td>
<td>- Pharmacies</td>
</tr>
<tr>
<td>- System interface to HA</td>
<td><strong>Engagement &amp; support:</strong></td>
</tr>
<tr>
<td>- GTIN on smallest order unit</td>
<td>- implementing MSCA</td>
</tr>
<tr>
<td>- bar code readiness to include GTIN, Qty, BN, Expiry date</td>
<td>- renovating stores &amp; facilities</td>
</tr>
<tr>
<td>- Bar coded Labels for shipper case &amp; logistic units</td>
<td>- adding manpower</td>
</tr>
<tr>
<td>- Testing and preparation</td>
<td>- supporting user training</td>
</tr>
</tbody>
</table>
How did we do it?
- Defining the process improvement in SCM

External:
From Suppliers

Advanced Shipping Notice (ASN)

Entire shipment with bar coded SSCC on each logistic unit

Internal:
At Pharmacy stores

Before goods arrive
1. Prior validation of manufacturer, country of origin, quantity, etc.
2. Online provision of lot no, expiry date

When goods arrive
3. Scan outer pack bar code label to verify Purchase Order (PO)
4. PO details displayed in scanner for inspection
5. Confirm receipt & instant update into system

Stock into stores
6. Pack-unpack containers to separate items
7. Scan GTIN with lot no. expiry date and confirm qty
8. Stock to pre-defined location in stores

Drug distribution
9. Enable lot-control with track-and-trace functionality
What is required on the product to enable track and trace

there should be bar coded information on GTIN, Batch, Expiry Date and QTY at the primary packing
Legislation in Hong Kong on pharmaceutical products

• Pharmaceutical Product registration requirement by HKSAR
  – no legislative requirement on bar code on drug package

• Pharmaceutical industry not mandate to have the bar code printed

• Generally, the sales and marketing people are not concerned with this need
Is it feasible to have Bar-code track-and-trace all the way?

Target areas for direct-from-supplier bar-coding:
- item identity, batch no., expiry date
- item identity, batch no., expiry date
stop at the logistic units!
Knowing the limits on what we can do initially.
How did we do it?
Defining time frame for SCM implementation

by phase & batch approach:

**Phase I**
- Track from distributors into the main stores
- Applicable to all pharmacy stores in all hospitals
- Involve 2 batches of vendors on all their products

**Phase II**
- Track from pharmacy stores to the dispensing stores
- Pilot in two hospitals PWH and QEH on Dangerous Drugs
How did we do it?
- using Global Industry Standards with professional service support

GS1 Standards adopted in the procurement cycle

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>GTIN</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>GLN</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>SSCC</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>GS1 Bar Code</td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>EDI</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>
How did we do it?

Vendor Engagement started in 2010

- No less than 6 mega vendor briefings, 25+ meetings, training workshops, testing, emails, etc...
  - Clarifications on project objectives, process, technical requirement, time frame.....
  - Frequently Ask Questions
- Mock ups on bar code labels,
- EDI messages testing
- End to End testing with mock up products
- On site testing at pilot sites
- With HKGS1 assistance and support
### SCM Project implementation: by batch & phase approach

<table>
<thead>
<tr>
<th></th>
<th>Batch I</th>
<th>Batch II</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(live run in June 2013)</td>
<td>(live run in April 2014)</td>
</tr>
<tr>
<td>13+1 vendors</td>
<td></td>
<td>+ 13 vendors</td>
</tr>
<tr>
<td>= about 70% of order lines</td>
<td></td>
<td>= about 16% more order lines</td>
</tr>
<tr>
<td>About 38% of item sources</td>
<td></td>
<td>About 13% item sources</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Vendor Name</th>
<th>Batch I</th>
<th>Batch II</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAXTER HEALTHCARD LTD</td>
<td>EUROPHARM LABORATOIRES CO. LTD.</td>
<td></td>
</tr>
<tr>
<td>DKS H.K. LTD</td>
<td>HK MEDICAL SUPPLIES LTD</td>
<td></td>
</tr>
<tr>
<td>FERRING PHARMACEUTICALS LTD</td>
<td>JOHNSON &amp; JOHNSON (HK) LTD</td>
<td></td>
</tr>
<tr>
<td>FRESENIUS MEDICAL CARE HK LTD</td>
<td>MEDI PHARMA LTD</td>
<td></td>
</tr>
<tr>
<td>GAMBRO HK LTD</td>
<td>MEKIM LTD</td>
<td></td>
</tr>
<tr>
<td>HIND WING CO LTD</td>
<td>PRIMAL CHEMICAL CO LTD</td>
<td></td>
</tr>
<tr>
<td>JACOBSON MEDICAL HK LTD</td>
<td>STAR MEDICAL SUPPLIES LTD</td>
<td></td>
</tr>
<tr>
<td>JEAN-MARIE PHARMACAL CO LTD</td>
<td>SYNO (HK) LTD</td>
<td></td>
</tr>
<tr>
<td>KERRFLEX SUPPLY CHAIN SOLUTIONS LTD</td>
<td></td>
<td>THE INTERNATIONAL MEDICAL CO. LTD.</td>
</tr>
<tr>
<td>LF ASIA (HONG KONG) LIMITED- HEALTHCARE DIVISION</td>
<td></td>
<td>TRENTON-BOMA LIMITED</td>
</tr>
<tr>
<td>LF ASIA (HONG KONG) LIMITED- UNIVERSAL DIVISION</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LUEN CHEONG HONG LTD</td>
<td>UNITED ITALIAN CORPORATION (HK) LTD.</td>
<td></td>
</tr>
<tr>
<td>U S SUMMIT CO LTD</td>
<td>VICKMANS LAB LTD</td>
<td></td>
</tr>
<tr>
<td>ZUELLIG PHARMA LTD</td>
<td>Y. C. WOO &amp; CO. LTD.</td>
<td></td>
</tr>
</tbody>
</table>
How did we do it?
Making available improved storage facilities
The Change - Goods Receipts from batch I vendors using ASN & SSCC
SMART Achievement

- System
- Scope
- Methodology
- Funding

- Internal
- External

- Methodology
- HKGS1 management

- Outbound
- Inbound

- Which clusters
- Which pharmacies
- Which vendors

- Funding
- Pilots
- Live run
- Roll out

- Live run on June 2012 in two clusters
- Dec 2012 in three clusters
- June 2013 in two more clusters
Way Forward

Patient & Medication Safety

Visibility

Traceability

where we want to go via the SCM Project
<table>
<thead>
<tr>
<th>Doctors</th>
<th>pharmacy</th>
<th>Nurses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electronic prescribing by clinicians</td>
<td>Vetting &amp; dispensing with workflow reengineering at Pharmacies</td>
<td>Drug administration by nurses using Bar Coded Medication Administration (BCMA)</td>
</tr>
</tbody>
</table>