Transforming the HealthCare Supply Chain process on pharmaceutical products in the Hong Kong Public Hospitals

Ms S C Chiang,
Bpharm (Hons), MRPS, MHA, FACHSM, FHKCHSE, FCPP
Ex Senior Pharmacist
Chief Pharmacist’s Office
Hospital Authority, Hong Kong
scchiang.ppi@outlook.com
About S C Chiang
with 30 years experience in public hospital service
with work focus on:

• Improving safety and efficiencies on Medication Use Process or Drug Distribution System in hospitals
• Developing & implementing pharmacy operational systems
• Developing & implementing e-prescribing and drug dispensing and nursing drug administration systems
• Incorporate Medication Safety principle
• Introducing Pharmacy automated dispensing systems
• Teaching Health and Pharmacy Informatics
Purpose of the session: share experience to address some questions on the SCM process for hospitals

- Why do we need to transform the Healthcare Supply Chain process on pharmaceutical products?
- What were the problems we are facing in the process?
- How did we go about making the transformation?
- What challenges did we encounter?
- What was the outcome?
Facts of Hong Kong (2016)

- Total area: 1,104 square kilometres
- Population: 7.3 million
- GDP: USD307.9 billion (HK$2,402 billion) 2015
- GDP per capita: USD42,160 (HK$328,854) 2015
- Life expectancy at birth (years)
  - Male: 81.2*
  - Female: 87.3*
- Infant Mortality Rate per 1,000 registered live births: 1.3*
- Maternal Mortality Ratio per 100,000 registered live births: 1.6*
- Healthcare professionals to population
  - Doctors: 1 : 534
  - Nurses: 1 : 145
  - Pharmacist: 1 : 2925

* Provisional figures

Sources:
(1) Census & Statistics Department, HKSAR
(2) Health Facts of Hong Kong, 2016 Edition, Department of Health HKSAR
Health Care System in Hong Kong

- HK healthcare is a dual-track system encompassing the public and the private sectors.
- Public healthcare is the cornerstone of our healthcare system, acting as the safety net for the whole community.
- Private healthcare sector provides personalised choices and more accessible services to those who are willing and may afford to pay for private healthcare services.
Hong Kong Healthcare System – Dual System

Sources:
(1) GDP: 2011
(2) Inpatient (secondary & tertiary care): “Public-private share by in-patient bed day occupied in 2011” from HA and Dept of Health

Public
Highly subsidized by govt

- 2.4% GDP
- 88% inpatients
- 31% outpatients

Private
Self-financed by patients

- 3.0% GDP
- 12% inpatients
- 69% outpatients
• A statutory body established on 1 December 1990
• Manages all public hospitals spread over 7 clusters in HK
  = 41 public hospitals (total 27,900 hospital beds)
  with 47 specialist & 73 general clinics
• Total 74,407 staff in 2016/17 including
  6,237 Doctors, 24,959 Nurses & 7,484 Allied Health staff
• 2015/16 Government Funding: ~ USD 7.56B (HKD59.0B)
Some of our hospitals in Hospital Authority Hong Kong (HAHK)
Two Levels of Operational Control for Pharmaceutical Service

• **At Head Office level:**
  - Chief Pharmacist’s Office
  - Central steering functions
    - set policy & directions
    - establish professional standards
    - develop and implement & support systems
    - monitor progress on all pharmaceutical issues

• **At Hospital Cluster level:**
  - 7 Hospital Pharmacies Cluster Chiefs
    - Control & perform decentralised operations at local pharmacies including purchasing, dispensing & clinical activities
Drug Expenditure for both in-patients and out-patients drugs in HA

- In 2015/16, annual drug expenditure amounted to USD731M (=HKD 5.7 billions)
- = about 10.0 % of HA’s overall expenditure
- Average annual increase in drug expenditures about 6.9 %
- Cover all drug dispensed to in-patients and out-patients
- About 2700 drug items in the drug list
- Prescriptions transactions in the range of tens of millions annually (55.2 million in 2014/15)
Out - Patients waiting to be served at different out-patient pharmacies at our hospitals
Magnitude of our **daily** business transactions in all HA pharmacies

<table>
<thead>
<tr>
<th>Transaction types</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of Dispensed <strong>Items</strong></td>
<td>234,000</td>
</tr>
<tr>
<td>No. of Dispensed <strong>Prescriptions</strong></td>
<td>62,000</td>
</tr>
<tr>
<td>No. of <strong>Patients Served</strong></td>
<td>56,000</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 involved in stock receipts</strong></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 Stock <strong>Movements in these stores</strong></td>
<td>2,400</td>
</tr>
</tbody>
</table>
Ever wonder what is the backend operation in our pharmacy stores serving the Hospitals, Specialist and General out-patients clinics?

• Where do our drugs come from?
• How to control and monitor the movement of drugs
• What are the logistics in stock receipts?
• What are involved in the processes?
• How to track and trace the Supply Chain?
The ordering and delivery processes in our HA pharmacies as at 2017

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
The importance and significance of Quality, Safety and Efficiency in drug distribution/medication use

From manufacturers / distributors

- 150 suppliers

Into pharmacy stores

- 42 hospitals

Out from pharmacy stores

- 100 pharmacies

Into dispensing areas

- 80 Stores

To point of care / patient areas

- 500 wards

Description of the Major Supply Chain Processes:

- From manufacturers/distributors
- To pharmacies
- Into dispensing areas
- To point of care/patient areas

Industry ➔ Logistics provider ➔ Healthcare facility ➔
# Drug distribution from pharmacy stores (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>
</table>

| Pharmacy working stores (for dispensing to out & in-patients & issue to wards) | No functionality to enable track and trace lot no. & expiry information |
How can we achieve track and trace in Supply Chain of pharmaceutical products?
“Insanity: Continuing to do the same thing and expecting different results.”

- Albert Einstein
2009 - Catalysts for change....

• A series of Medication Incidents in 2009
• Contaminated products being used
  – Allopurinol & Frusemide: mould contamination
• Registration status of products
  – Metformin: unregistered pack size
  – Povidone iodine: expired registration
• Stability in products
  – 216 products deregistered from a manufacturer overnight
2009 - Catalysts for change....

Drugs' expiry date was extended. 3 million imported tablets were ineffective.
The Journey on Supply Chain Modernisation Project began when HA announced in March 2009 – The Key Initiatives in HA for pharmacy

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
Turning threats into opportunity
How did we do this?
What are the Challenges in SCM Project: overcoming the unknowns!
Leadership & Project Governance

• **Central level**
  - User Resource Group (URG)
    - Chaired by Cluster Service Director at Head Office 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 (CIPRG)
    - each Chaired by Cluster Chief Executives
    - members from hospital administrators, finance and pharmacy
    - meet quarterly to report & monitor progress of implementation
Understand the need to transform / modernise the Supply Chain process on Pharmaceutical Products.

<table>
<thead>
<tr>
<th>From manufacturers</th>
<th>➔ into pharmacy stores</th>
<th>➔ into Dispensing area</th>
</tr>
</thead>
<tbody>
<tr>
<td>➔ out from pharmacy stores</td>
<td>➔ to point of care (patients)</td>
<td></td>
</tr>
</tbody>
</table>
Identify the scope to be covered in the Supply Chain Modernisation project on Pharmaceutical Products

*IPMOE = In-patient Medication Order Entry
**DDAS= Drug Distribution and Administration System
Defining what we want to do in SCM?

Enable track and trace of product movement from suppliers to pharmacy stores through Mobile Supply Chain Application (MSCA) with provision of:

- Advance Shipping Notice (ASN) from suppliers to pharmacy ERP to verify Purchase Order
- Bar coded information on individual product and outer delivery pack from suppliers to verify required information, manufacturer, lot no., expiry dates, etc.
Finding out the means and the how’s to do the project

- 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
Supply Chain Modernisation on pharmaceutical products – areas of concerns

- System
  - Scope
  - Methodology
  - Funding

- Process
  - Workflow
    - inbound
    - outbound
    - Support services
    - Pharmacy staff

- People
  - Internal management
  - External vendors
  - HKGS1
  - Pharmacy staff

- Place
  - Which clusters
  - Which pharmacies
  - Which vendors

- Time
  - Pilots
  - Live run
  - Roll out
The IT system: Using MSCA in ERP (Oracle) (Mobile Supply Chain Application)

- Making use of mobile devices to support the Supply Chain Process from Goods receipt to Goods issue as much as possible
- Use wireless connection, scanners, bar codes, data transmission
- Minimize manual data entry
- Improve accuracy & efficiency of data capture
- Not RFID but bar codes
Use the industry standards for SCM process

The most widely used supply chain standards system in the world

GS1 - a not-for-profit organisation dedicated to the design and implementation of global standards to improve the efficiency and visibility of supply chains globally and across sectors

- Provide the industry standards for SCM process
  - Advise on data elements e.g. GTIN, GLN, bar code, EDI messages - structure and format
  - Provide training, workshops, platform and business solutions
Understand the Industry Standards provided by GS1

### GS1 Identifiers in Healthcare

<table>
<thead>
<tr>
<th>GS1 Key</th>
<th>Represented Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>GTIN (Global Trade Item Number)</td>
<td>Identification of Healthcare Product</td>
</tr>
<tr>
<td>GLN (Global Location Number)</td>
<td>Identification of Location &amp; Legal Entity</td>
</tr>
<tr>
<td>GSRSN (Global Service Relation Number)</td>
<td>Identification of Patient &amp; Care Giver</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Application Identifier</th>
<th>Represented Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>AI(01)</td>
<td>Global Trade Item Number</td>
</tr>
<tr>
<td>AI(10)</td>
<td>Batch Number</td>
</tr>
<tr>
<td>AI(17)</td>
<td>Expiration Date</td>
</tr>
<tr>
<td>AI(21)</td>
<td>Serial Number</td>
</tr>
</tbody>
</table>

*GS1 keys & Application Identifiers are recognised by ISO.*

### Data Structure of a GTIN

- **GTIN-13**
- **GS1 PREFIX**
  - To identify territory of the GS1 organization issuing the number.
- **GS1 COMPANY NUMBER**
  - To identify the member company; assigned by the local GS1 organization.
- **ITEM REFERENCE**
  - To identify the unique product and service; assigned by the member company.
- **CHECK DIGIT**
  - Calculated by modulo-10 formula to serve as an accuracy check on the entire number by scanning devices.

### Batch Level Identification & Expiration Control

- For batch control or expiry date control, which are common to healthcare items, people may prefer encoding batch number and expiration date in barcode.

- GS1 System provides data structure standard for them as well:
  - **Batch number** – Alphanumeric data format with variable length up to 20 characters
  - **Expiration date** – Numeric data format (Yymmdd) with fixed length of 8 digits

```
<table>
<thead>
<tr>
<th>GTIN (n2=14)</th>
<th>Expiration Date (Yymmdd)</th>
<th>Batch No. (n2=14, 20)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application Identifiers (AI)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
```

Expiration date & batch no. must be used with GTIN and application identifier (AI) in a barcode.
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
Is it feasible to have Bar-code track-and-trace all the way? 

Target areas for direct-from-supplier bar-coding
Legislation in Hong Kong on pharmaceutical products

- Pharmaceutical Product registration requirement by HKSAR
  - Safety, Quality, Efficacy
  - no legislative requirement on bar code on drug package
- Pharmaceutical industry not mandated to have the bar code printed
- Generally, the sales and marketing people are not concerned with this need
Surveyed the prevailing status of various bar coded packing units by different suppliers.

**Bar & Code (Bar Code)**

- **GS1 PREFIX**
  - To identify territory of the GS1 organization issuing the number.
  - In Hong Kong, the GS1 Prefix assigned to GS1 HK is 489

- **GS1 COMPANY NUMBER**
  - To identify the member company; assigned by the local GS1 organization.

- **ITEM REFERENCE**
  - To identify the unique product and service; assigned by the member company.

- **CHECK DIGIT**
  - Calculated by modulo-10 formula to serve as an accuracy check on the entire number by scanning devices.

Example:

- **GS1 Prefix**: 4
  - **Company Number**: 891668
  - **Check Digit**: 3
  - **Item Reference**: 326689
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
- item identity, batch no., expiry date

stop at the case/carton pack!
<table>
<thead>
<tr>
<th>Packaging Hierarchy</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Packaging</td>
<td>A pill in blister cell</td>
</tr>
<tr>
<td>Secondary Packaging (Ordering base unit)</td>
<td>2 blisters in 1 box</td>
</tr>
<tr>
<td>Multi Pack</td>
<td>7 boxed bound to create one package</td>
</tr>
<tr>
<td>Shipper Case</td>
<td>8 multi pack in a corrugated Cardboard carton</td>
</tr>
<tr>
<td>Logistic Unit</td>
<td>8 cartons bound on a pallet</td>
</tr>
</tbody>
</table>
The process flow in Mobile Supply Chain Application

**External: From Suppliers**

- Entire shipment with bar coded SSCC on each logistic unit
- Advanced Shipping Notice (ASN)

**Internal: At Pharmacy stores**

<table>
<thead>
<tr>
<th>Before goods arrive</th>
<th>1. Prior validation of manufacturer, country of origin, quantity, etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2. Online provision of lot no, expiry date</td>
</tr>
<tr>
<td>When goods arrive</td>
<td>3. Scan outer pack bar code label to verify PO</td>
</tr>
<tr>
<td></td>
<td>4. PO details displayed in scanner for inspection</td>
</tr>
<tr>
<td></td>
<td>5. Confirm receipt &amp; instant update into system</td>
</tr>
<tr>
<td>Stock into stores</td>
<td>6. Pack-unpack containers to separate items</td>
</tr>
<tr>
<td></td>
<td>7. Scan GTIN with lot no. expiry date and confirm qty</td>
</tr>
<tr>
<td></td>
<td>8. Stock to pre-defined location in stores</td>
</tr>
<tr>
<td>Drug distribution</td>
<td>9. Enable lot-control with track-and-trace functionality</td>
</tr>
</tbody>
</table>
The Key elements of Despatch Advice (ASN):

- SSCC (Serial Shipping Container Code)
- GTIN
- Batch/ Lot number
- Expiration Date
- and other elements...

*The Despatch Advice (ASN) should be sent 24 hours before the Physical Goods Delivery.*
All transaction documents in electronic format!

Electronic Purchase Order

ezTRADE

Electronic
1. Purchase Order Response
2. Advance Shipment Notice
3. Invoice
for vendors with no in house IT system ability

Cat A – EDI Gateway (EDI PO, PO Response, PO Change, ASN, Invoice)

Programming and Integration is needed ERP Capable Suppliers
EDI Advance Shipping Notices before delivery

- **Date of Delivery**
- **Ship From / To Party**
- **SSCC, GTIN, Country of Origin, Expiration Date, and Batch no...**
**Defining our action with stakeholders**

<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,</td>
<td>- Support services</td>
</tr>
<tr>
<td>SSCC, GTIN, GLN</td>
<td>- Pharmacies</td>
</tr>
<tr>
<td><strong>Pharmaceutical vendors:</strong></td>
<td><strong>Engagement &amp; support:</strong></td>
</tr>
<tr>
<td>- System interface to HA</td>
<td>- implementing MSCA</td>
</tr>
<tr>
<td>- GTIN on smallest order unit</td>
<td>- renovating stores &amp; facilities</td>
</tr>
<tr>
<td>- bar code readiness to include GTIN, Qty, BN, Expiry date</td>
<td>- adding manpower</td>
</tr>
<tr>
<td>- Bar coded Labels for shipper case &amp; logistic units</td>
<td>- supporting user training</td>
</tr>
<tr>
<td>- Testing and preparation</td>
<td></td>
</tr>
</tbody>
</table>
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
Importance of GTIN in SCM

- GTIN is a compulsory requirement for EDI PO
- It is inevitably that some items would not carry a valid GTIN because
  - Free Goods, Sample Goods, Donated Goods, Clinical Trial Goods and duplicate item code created for special program...)
  - Due to System limitation, one GTIN cannot be assigned to multiple item codes
  - GTIN may not be available when new items are introduced into HA
GTIN Allocation

different GTIN required
• **Locations.** *Physical, functional or legal entities* requiring a permanent identification (company, department, warehouse, ...)

• **GLN** is a non-significant, fixed length, 13 digits number which does not contain any classifying elements

 GLN can be carried by GS1-128 + AI
A Universal Unique Number to Identify

Legal Locations

Company

Subsidiary

Warehouse

Store

Physical Locations

Functional Locations

Accounting Dept

Purchasing Dept

Locations - Types of GLN
Other Standards provided by GS1
## Case Label Requirement

### The Data String for Bar Code on the case label

<table>
<thead>
<tr>
<th>Application Identifier</th>
<th>Meanings</th>
<th>Example</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>(02)</td>
<td>The data following (02) is the GTIN of <strong>ordering base unit</strong></td>
<td>(02)04891668000022</td>
<td>Must be 14 digit no.</td>
</tr>
<tr>
<td>(17)</td>
<td>The data following (17) is the expiration date</td>
<td>(17)110106</td>
<td>YYMMDD Format</td>
</tr>
<tr>
<td>(37)</td>
<td>The data following (37) is the count of trade item</td>
<td>(37) 12345678</td>
<td>Up to 8 digit no.</td>
</tr>
<tr>
<td>(10)</td>
<td>The data following (10) is batch/Lot no.</td>
<td>(10) ABCDEFGH</td>
<td>Up to 20 alphanumeric</td>
</tr>
</tbody>
</table>

\[
= (02)04891668000022(17)110106(37)12345678(10)ABCDEFGH
\]
Tendering of Hardware & printers & labels
Hospitals side – engagement with local management & pharmacy

- ERP System
  - Early engagement
  - Data preparation
  - Data cleansing
  - Data conversion
- MSCA / SCM
  - Hospitals Stores Facilities
- Additional Manpower
- Training & communication
- On site & ongoing support
How did we do it?
Defining the scope of the Supply Chain Modernisation Project

From manufacturers → into pharmacy stores → into Dispensing area
out from pharmacy stores → to point of care (patients)
How did we do it?
Defining approach for SCM implementation

By phase & batch approach:

**Phase I**
- Track from distributors into the main pharmacy 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 only
### Phase I

**Batch I EDI vendor**

*live run in June 2012*

<table>
<thead>
<tr>
<th>No.</th>
<th>Company Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>BAXTER HEALTHCARD LTD</td>
</tr>
<tr>
<td>2</td>
<td>DKSH H.K. LTD</td>
</tr>
<tr>
<td>3</td>
<td>FERRING PHARMACEUTICALS LTD</td>
</tr>
<tr>
<td>4</td>
<td>FRESENIUS MEDICAL CARE HK LTD</td>
</tr>
<tr>
<td>5</td>
<td>GAMBRO HK LTD</td>
</tr>
<tr>
<td>6</td>
<td>HIND WING CO LTD</td>
</tr>
<tr>
<td>7</td>
<td>JACOBSON MEDICAL HK LTD</td>
</tr>
<tr>
<td>8</td>
<td>JEAN-MARIE PHARMACAL CO LTD</td>
</tr>
<tr>
<td>9</td>
<td>KERRFLEX SUPPLY CHAIN SOLUTIONS LTD</td>
</tr>
<tr>
<td>10</td>
<td>LF ASIA (HONG KONG) LIMITED- HEALTHCARE DIVISION</td>
</tr>
<tr>
<td>11</td>
<td>LF ASIA (HONG KONG) LIMITED- UNIVERSAL DIVISION</td>
</tr>
<tr>
<td>12</td>
<td>LUEN CHEONG HONG LTD</td>
</tr>
<tr>
<td>13</td>
<td>U S SUMMIT CO LTD</td>
</tr>
<tr>
<td>14</td>
<td>ZUELLIG PHARMA LTD</td>
</tr>
</tbody>
</table>

14 EDI vendors

- 2,237 items (= 69.4%)
- 191,683 order lines (= 71.3%)
- Live run in two clusters in June 2012
- Roll out to all clusters in June 2013
Phase I
Batch II EDI vendor
(live run in Apr 2014)

| 1 | Y. C. WOO & CO. LTD. |
| 2 | MEDIPHARMA LTD |
| 3 | THE INTERNATIONAL MEDICAL CO. LTD. |
| 4 | JOHNSON & JOHNSON (HK) LTD |
| 5 | PRIMAL CHEMICAL CO LTD |
| 6 | EUROPHARM LABORATOIRES CO. LTD. |
| 7 | MEKIM LTD |
| 8 | STAR MEDICAL SUPPLIES LTD |
| 9 | TRENTON-BOMA LIMITED |
| 10 | UNITED ITALIAN CORPORATION (HK) LTD. |
| 11 | HK MEDICAL SUPPLIES LTD. |

11 EDI vendors
- 314 items (= 9.7%)
- 20,383 order lines (=7.6%)
- Live run in all clusters in April 2014
### Phase I

Batch III EDI vendor
(Tentatively live run in April 2017)

<table>
<thead>
<tr>
<th>No.</th>
<th>Company Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ASSOCIATED MEDICAL SUPPLIES CO LTD</td>
</tr>
<tr>
<td>2</td>
<td>HING AH PHARMA CO LTD</td>
</tr>
<tr>
<td>3</td>
<td>JULIUS CHEN &amp; COMPANY (HK) LIMITED</td>
</tr>
<tr>
<td>4</td>
<td>NATIONAL PHARMACEUTICAL CO LTD</td>
</tr>
<tr>
<td>5</td>
<td>SINO-ASIA PHARMACEUTICAL SUPPLIES LTD</td>
</tr>
<tr>
<td>6</td>
<td>TCM HEALTHCARE (LONDON) LTD</td>
</tr>
<tr>
<td>7</td>
<td>TREASURE MOUNTAIN DEVELOPMENT CO LTD</td>
</tr>
<tr>
<td>8</td>
<td>UNAM CORPORATION LTD</td>
</tr>
<tr>
<td>9</td>
<td>UNICO ALLIANCE COMPANY LIMITED</td>
</tr>
<tr>
<td>10</td>
<td>VANTONE MEDICAL SUPPLIES CO LTD</td>
</tr>
<tr>
<td>11</td>
<td>ZENFIELDS H.K. LTD</td>
</tr>
</tbody>
</table>

**11 EDI vendors**
- 218 items (= 6%)
- 5,983 order lines (= 2.2%)
- To Live run in all clusters in 2Q 2017
## SCM Project implementation: by phrase & batch approach

<table>
<thead>
<tr>
<th>Phase I</th>
<th>Batch I</th>
<th>Batch II</th>
<th>Batch III</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>14 EDI vendors</strong></td>
<td><strong>11 EDI vendors</strong></td>
<td><strong>11 EDI vendors</strong></td>
<td></td>
</tr>
<tr>
<td><strong>2,237 items (= 69.4%)</strong></td>
<td><strong>314 items (= 9.7%)</strong></td>
<td><strong>218 items (= 6%)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>191,683 order lines (= 71.3%)</strong></td>
<td><strong>20,383 order lines (= 7.6%)</strong></td>
<td><strong>5,983 order lines (= 2.2%)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Live run in two clusters in Jun 2012</strong></td>
<td><strong>Live run in all clusters in April 2014</strong></td>
<td><strong>To Live run in all clusters in 1Q 2017</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Rollout to all clusters in June 2013</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Total EDI vendors** = 36 vendors  
= 85.1% items  
= 81.1% order lines
Preparing for the Challenges

leadership

technology

System
- Scope
- Methodology
- Funding

Process
- Workflow
  - outbound
  - inbound
  - Support services
  - Pharmacy staff
- Internal management
- External vendors
  - HKGS1

People
- Which clusters
- Which pharmacies
- Which vendors

Place
- Which

Time
- Pilots
- Live run
- Rollout

infrastructure

resources
SMART Achievement

- **System**
- **Scope**
- **Methodology**
- **Funding**

**Live run on**
- June 2012 in two clusters
- Dec 2012 in three clusters
- June 2013 in two more clusters
The Change -
Goods Receipts from Batch I vendors using ASN & SSCC
The gains – a much improved goods receipts process assisted by technology
The Gains -
much better & improved storage facilities
where we want to go via the SCM Project

where we were

Patient & Medication Safety

Visibility

Traceability
Chief Pharmacist’s Office - Supply Chain Modernisation Project
Won the
GS1 ‘Healthcare Provider Implementation Case Study Award’
in April 2014 in Seoul, Korea
Way Forward

The Supply Chain Modernisation on Pharmaceutical Products

*IPMOE = In-patient Medication Order Entry
**DDAS= Drug Distribution and Administration System
• Electronic prescribing by clinicians
• Vetting & dispensing with workflow reengineering at Pharmacies
• Drug administration by nurses using BCMA
Implementation completed @ 31 July 2014
將軍澳醫院派藥電子化

【本報港聞部報道】將軍澳醫院已全面採用「住院病人電子藥物處理系統」，該系統將藥房及病人資料全面電算化，減低醫院在派藥、執藥方面出現醫療事故的風險。醫管局期望2017至18年可以將系統推行至全港約15間公立醫院。

減低醫療事故

現時將軍澳醫院的醫生每日都要手寫超過千張的藥單，其中大約有10多張藥紙上的字被機械化不清，藥劑師及護士在「執藥」時無法辨識醫生的藥方，需要與醫生再溝通，費時失事。「住院病人電子藥物處理系統」能夠將藥方電子化。當藥房收到藥方時，可以立即根據電腦藥方的資料配藥，減低藥房人員在文字辨識上，出現了無藥、執藥等醫療事故，同時亦提升了工作效率。

新系統亦幫助到護士派藥，他們派藥時會用掃描器核對病人手冊，電腦會確保病人的身份，亦會顯示出病人居住的敏感紀錄及服藥次數，減少護士派藥時的風險。暫時藥房的分量仍然靠護士安排，系統仍需再改善。

醫管局表示，現時有3間醫院推行藥物電子處理系統，包括威爾斯親王醫院、瑪嘉烈醫院、將軍澳醫院。醫管局指出，這些系統有改善後仍然有改善空間。
IPMOE team - Outstanding team award in HAHK in 2015

1.7億研「執藥」系統 減三成錯漏

【本報訊】公立醫院近年依賴醫生手寫藥單向住院病人處方藥物，再由護士抄寫傳真到藥房，藥劑師將藥單輸入電腦及「執藥」後，將藥物送到病房由護士核對派發，過程繁複且易有手民之誤。醫管局兩年前率先以瑪嘉烈醫院一個傷病房作試點，引入自行研發的

「住院病人藥物處方系統」（IPMOE），將住院病人的藥物流程全面電子化，藥單錯誤個案初步大減三成，將陸續推廣到所有急症醫院。

相關新聞

關鍵字

醫院管理局

將推廣至17間急症醫院

IPMOE於一三年四月首次在瑪嘉烈醫院傷病房作試點，但起步並不順利，瑪嘉烈醫院副行政總監羅振邦指：「主要係慢，醫生輸入完一隻藥，要運算成分鐘可再入另一隻藥，系統靠wifi運作，但醫院有喺位收唔到訊號。」試行三個月無奈要暫停，後期軟件及硬件後續解決問題，並先後於瑪嘉烈、威爾斯、律敦治、北區陳李息及將軍澳醫院推行。
What do you see?
The Journey is long & tough

Insanity:

Continuing to believe that if we insist and persist, we can make the difference, some day....

- S C Chiang

scchiang.ppi@outlook.com
tel: 852-96631379