

The Giant Steps to improve patient and medication safety in public hospitals – what, how and when



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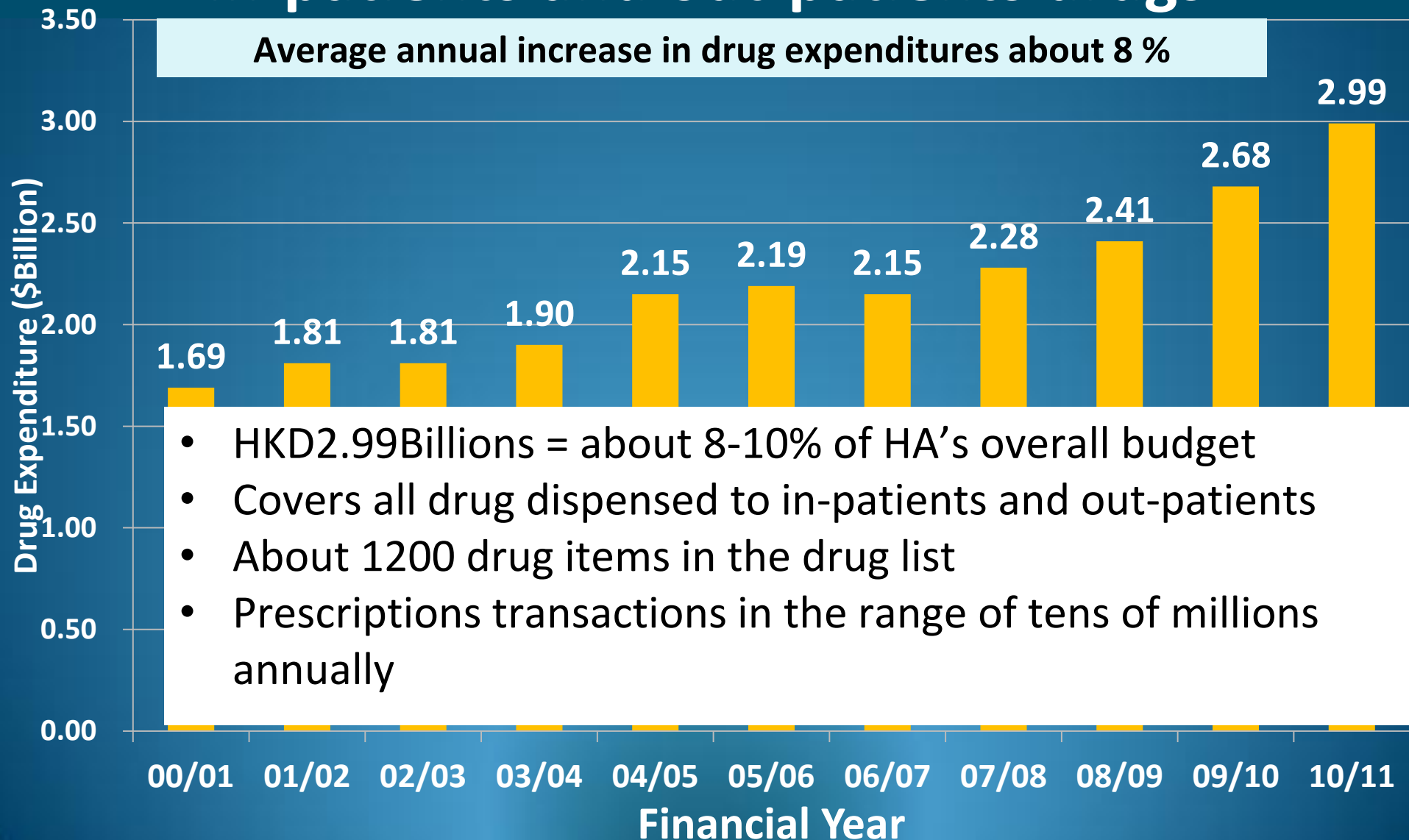


- A statutory body established on 1 December 1990
- Manages all public hospitals in HK, and accountable to the Government through Secretary for Food and Health Bureau
- 58,473 staff in Head Office, 41 public hospitals (in 7 clusters), 48 specialist clinics and 74 general clinics
- 26,900 hospital beds in all public hospitals (3.8 hospital beds per 1,000 population)
- 2011 - 12 Government Funding: ~ \$36.8 billion (Estimate)



Drug Expenditure in HA for both in-patients and out-patients drugs

Average annual increase in drug expenditures about 8 %



What is the end to end process in drug distribution/medication use ?

From manufacturers / distributors

Into pharmacy stores

Out from pharmacy stores

Into dispensing areas

To point of care / patient areas

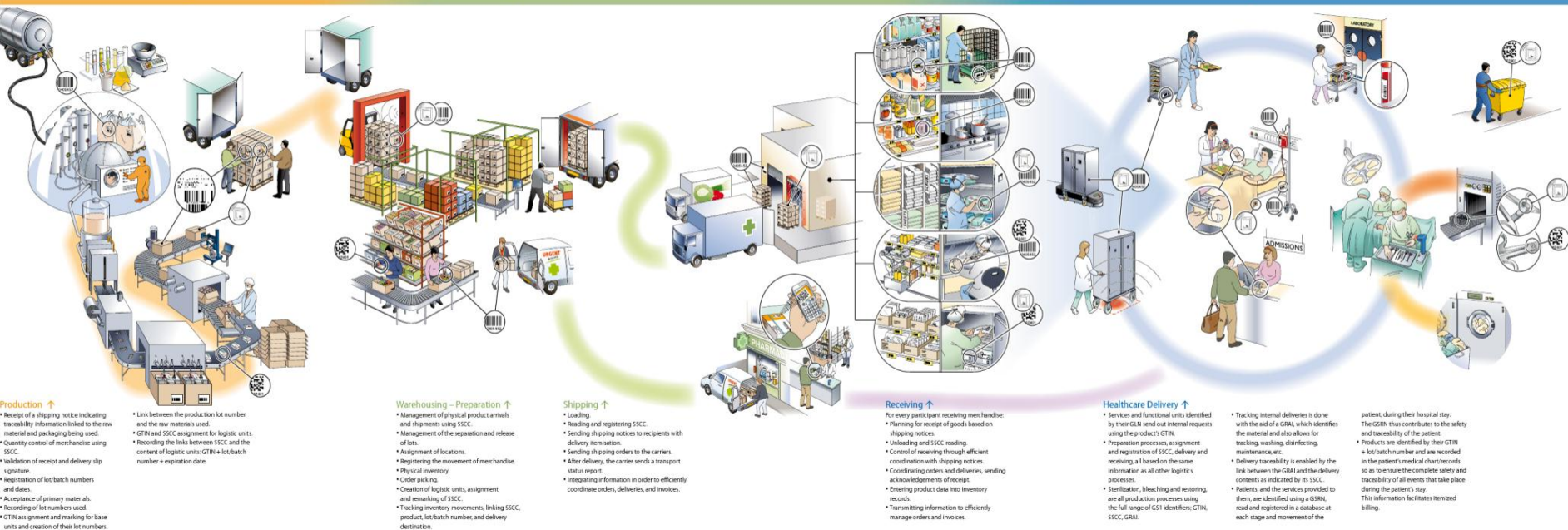
Description of the Major Supply Chain Processes

Each of these processes might be performed by different organisations or by a single entity

Industry →→→

Logistics provider →→→

Healthcare facility →→→



Quality, Safety and Efficiency in drug distribution/medication use



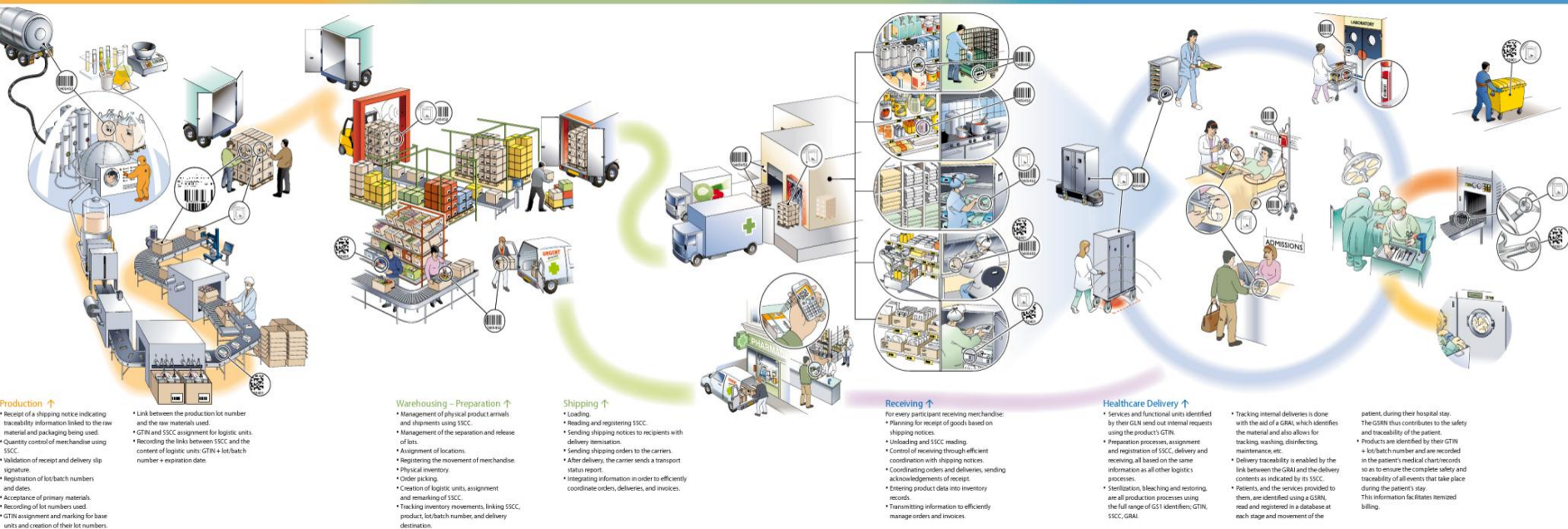
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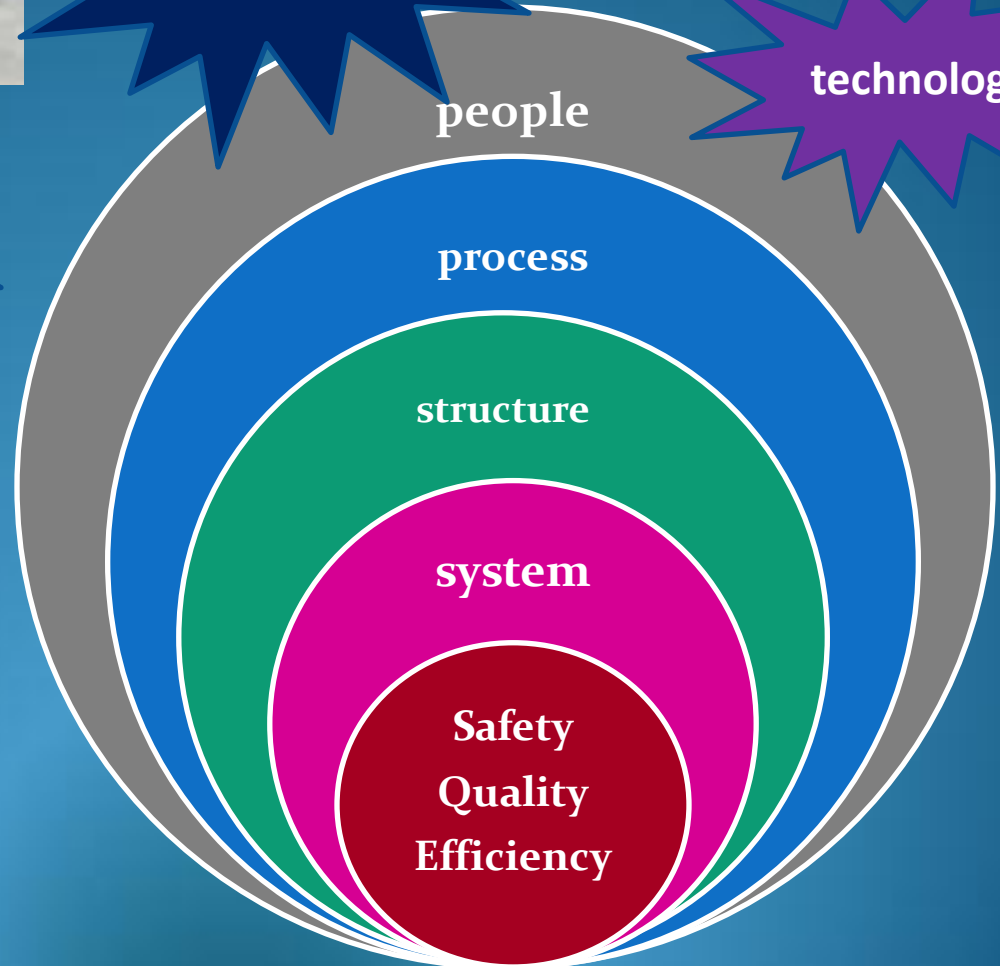
The big challenge

leadership

resources

infrastructure

technology



4克變8克 威院用藥出錯

影響白血球生長 化療病人仍留醫

【本報訊】沙田威爾斯親王醫院藥房職員為一名血癌女病人轉化療藥物時，錯誤將劑量加大一倍，其後在藥房職員點算藥物時發現，翌日作出更正，病人目前仍然留醫。有醫生直指今次屬人為出錯，會影響白血球的正常生長，延長血癌病人的復原時間。院方沒有交代該員工的職級及是否仍然上班。

記者：陳沛泳



沙田威爾斯親王醫院藥房沙院人為出錯，將化療用的藥物份量搞錯，該病人仍留醫。

院發言人表示，一名48歲血癌女病人本月廿四日開始接受化療，療程為期5天，每天需注射兩次，8克化療藥物 Cytarabine 加入250毫升生理鹽水之用。

藥房職員失誤

治療當天(本月廿四)藥房職員誤將4克加入250毫升生理鹽水內，而病人所獲的兩份化療藥，然後送到病房，人員為病人進行化療，病人即應一天內化完化療藥，卻攝取了8克。其後藥房職員發現時發現，即時通知病房醫護人員。

醫生即時作出評估，病人沒有不適仍然留醫，情況穩定。院方已在病人化完，將用藥劑量作出正確調整，病人整個療程沒有超出預設範圍。院方已向病人發言人表示，會深入調查事件，並對藥物的相關指引，及根據人力資源現有藥房職員，但院方沒有回應該員工是否仍然上班。

內科腫瘤科專科

News Headlines

醫療失誤訴訟增五倍

醫管局12年賠償逾三億元

涉及醫管局醫療失誤

【本報訊】醫院管理局在過去十二年，涉及醫療

3 million imported tablets were ineffective

Drug's expiry date was faked

Ella Lee and Phyllis Tsang

More than 3 million tablets of a pain-killer imported by a Hong Kong company carried a fabricated expiry date, the Department of Health revealed yesterday.

The drug co-salgic, imported by Unipharm Trading from Britain, was found to have carried a fake expiry date one year later than what it should have been.

The department said there was "no immediate safety, efficacy or quality concern".

"However, people should stop using these two batches of co-salgic and seek advice from doctors, dentists or pharmacists as appropriate

公院藥物事故三季萬二宗

【記者伍詠茵報道】醫管局最新資料顯示，去年首三季公立醫院白頭日出的藥物事故共約一萬二千多宗，九成事故及時糾正，後，前日電腦系統出現故障導致數百人輪候配藥，昨日已回復正常。



近日藥物風波影響不少病人早前須到公院換藥，醫管局為堵塞漏洞，推出7招改善問題。(資料圖片)

藥物採購系統改善7招

- 1 在採購高風險藥物項目時，要求生產商引進微生物學測試作為先決條件，並在運送藥物時提供該批藥物的批號檢驗證明書
- 2 加強由醫管局進行的藥物樣本測試，除涵蓋更廣泛種類的藥物，並會按風險程度，進行微生物學測試
- 3 要求供應商在送貨單上提供更多付運藥物的基本資料，協助醫院更準確有效驗收貨品
- 4 與衛生署探討更易取得藥物註冊重要資料的渠道，包括包裝規格，加強協助核實藥物是否符合註冊規管要求
- 5 考慮向多於一個供應來源，採購高用量和高風險藥物
- 6 提升醫管局的藥物資訊系統以加強監控，並逐步邁向：
 - 引進條碼系統
 - 自動核對訂購和送貨內容是否相符
 - 在不同的發放單位提供自動藥物核對及批號追蹤功能
 - 防止發放過期藥品
- 7 設立藥物品質保證辦事處，加強質素監管及實施各種改善措施

資料來源：醫管局

Steps taken since 2009 to revamp the Drug Distribution / medication use

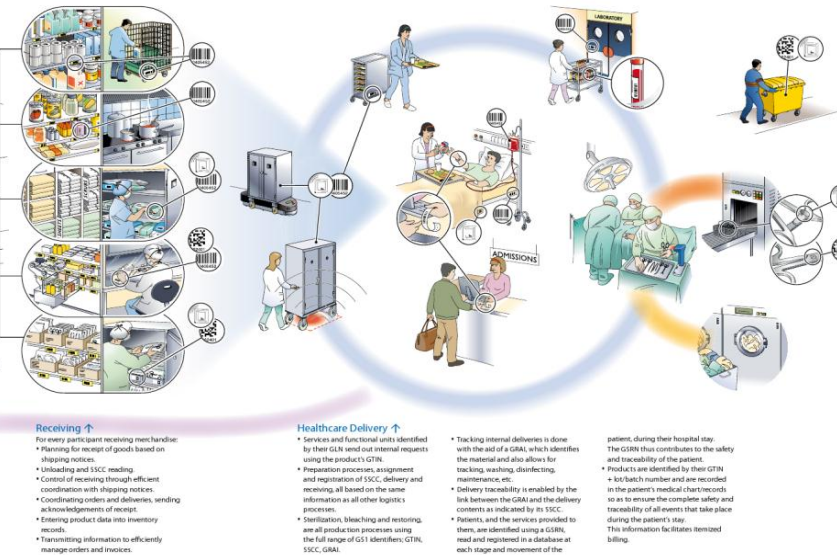
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External

Supply Chain Modernisation

Internal

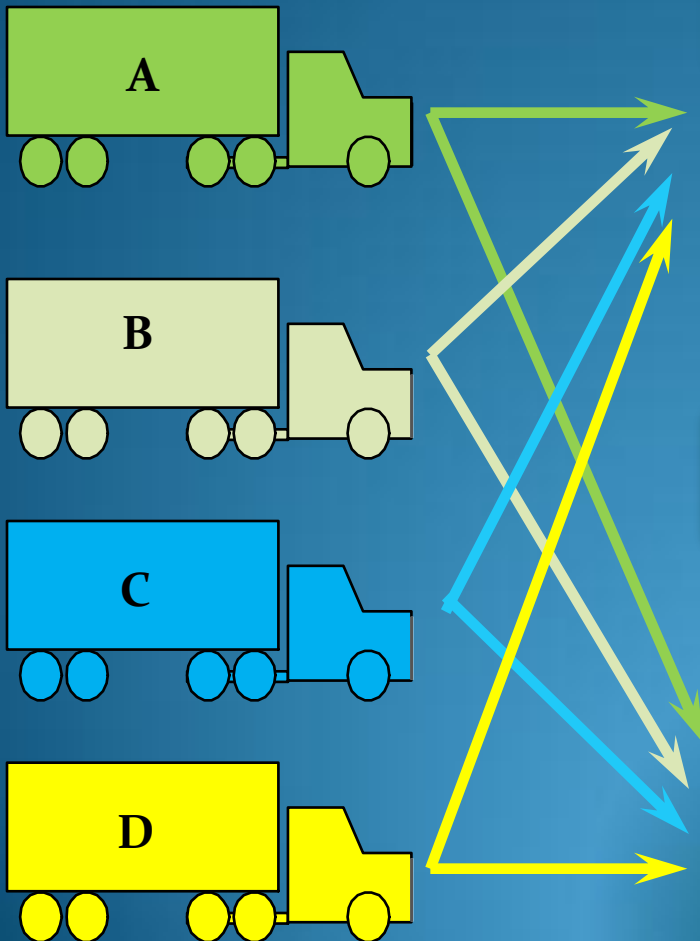
IPMOE */ DDAS**

*IPMOE = In-patient Medication Order Entry

**DDAS= Drug Distribution and Administration System

SCM process – the practice today

External :
From Suppliers (>150)



Internal :
At Pharmacy stores (>100) in 7 clusters

**Delivery details
on hard copy**



**No electronic
nor bar-coded
information**



1. Manual checking of standard information
 - manufacturer
 - country of origin
 - quantity
 - lot no., expiry date, etc.
2. Manual entry of standard information into Pharmacy system
3. Stocking onto the shelves in the Pharmacy stores

Drug distribution from pharmacy stores (today's practice)



- Pharmacy working stores (for drug dispensing to out & in-patients & issue to wards)
- Manual entry of
 - lot no. & expiry date
- No functionality to enable auto track and trace lot no. & expiry information

Supply Chain Modernization - the information flow in ERP

Purchase Order to vendor (via EDI)



Advance Shipping Notice (via EDI)



Serialise Shipping Container Codes (SSCC)



Physical goods receipt (scanning bar codes)



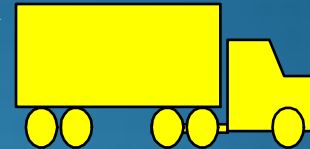
Invoice (via EDI)

SCM tomorrow – the improved workflow process with Mobile Supply Chain Application (MSCA)

External : From Suppliers

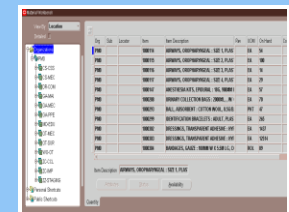
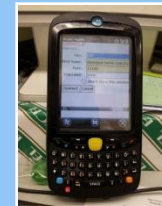
Advanced Shipping Notice (ASN)

**Entire shipment with
bar code label
(outer pack) SSCC**



Internal : At Pharmacy stores

Before goods arrive	<ol style="list-style-type: none"> 1. Prior validation of manufacturer, country of origin, quantity, etc. 2. Online provision of lot no, expiry date
When goods arrive (at staging process)	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 9. Enable lot-control with track-and-trace functionality



What is MSCA?

(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



Various bar coded packing units in pharmacy

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

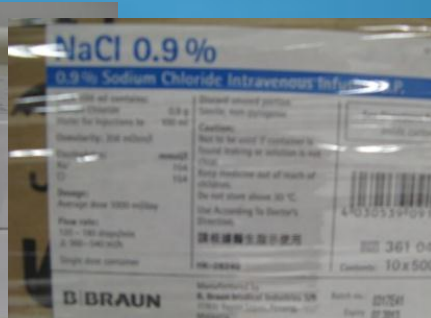
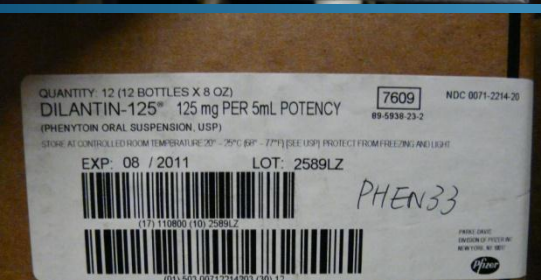
To identify the member company; assigned by the local GS₁ organization

ITEM REFERENCE

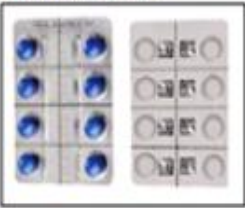
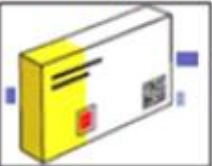


To identify the unique product and service; assigned by the member company

CHECK DIGIT

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



GTIN & Barcoding requirement

Packaging Hierarchy	Example	Identification Key	Example	Bar code	Bar Code Type
Primary Packaging	<p>A pill in blister cell</p> 	No	NA	No	NA
Ordering base unit	<p>2 blisters in 1 box</p> 	GTIN ✓	GTIN A: 489-1668-00002-2	Optional	GS1-128, GS1 Data Bar, GS1 Data Matrix, EAN/UPC.
Multi Pack	<p>7 boxed bound to create one package</p>	No	NA	No	NA
Case	<p>8 multi pack in a corrugated cardboard cartons</p> 	Optional	GTIN B: 489-1668-00001-5 (1 unit of GTIN B = 56 units of GTIN A)	✓	GS1-128, GS1 Data Matrix
Logistic Unit	<p>Pallet of 8 cases</p>  <p>Pallet</p>	SSCC ✓	SSCC: 1-489-1668-000000001-2	✓	GS1-128

Steps taken since 2009 to revamp the Drug Distribution /medication use

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Logistics provider →→→

- Entire SCM process is voluntary
- No credit , no penalty
- Depends on the vendors readiness & willingness & ability
- 13 vendors batch
- 2 clusters to pilot Dec 2011
- Users' acceptance of new processes

External

Supply Chain Modernisation

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**DDAS= Drug Distribution and Administration System

Steps taken since 2009 to revamp the Drug Distribution /medication use

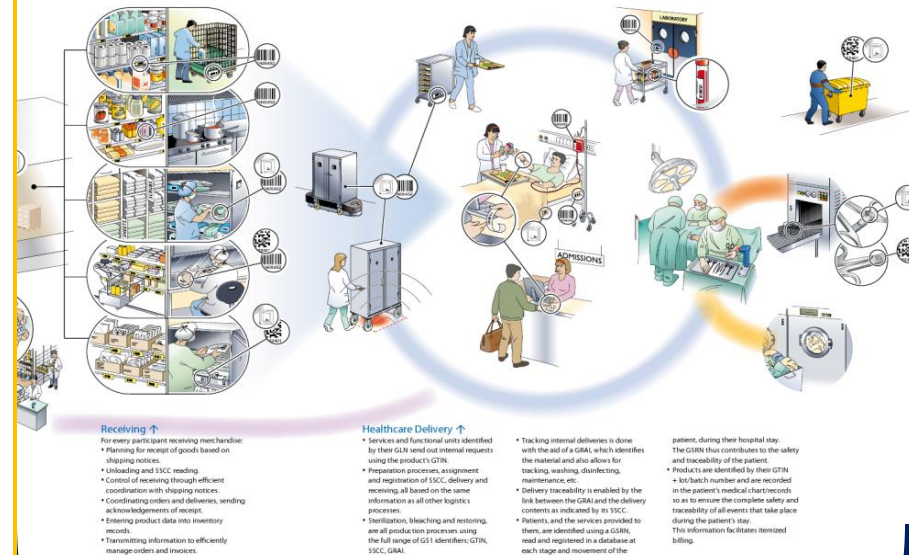
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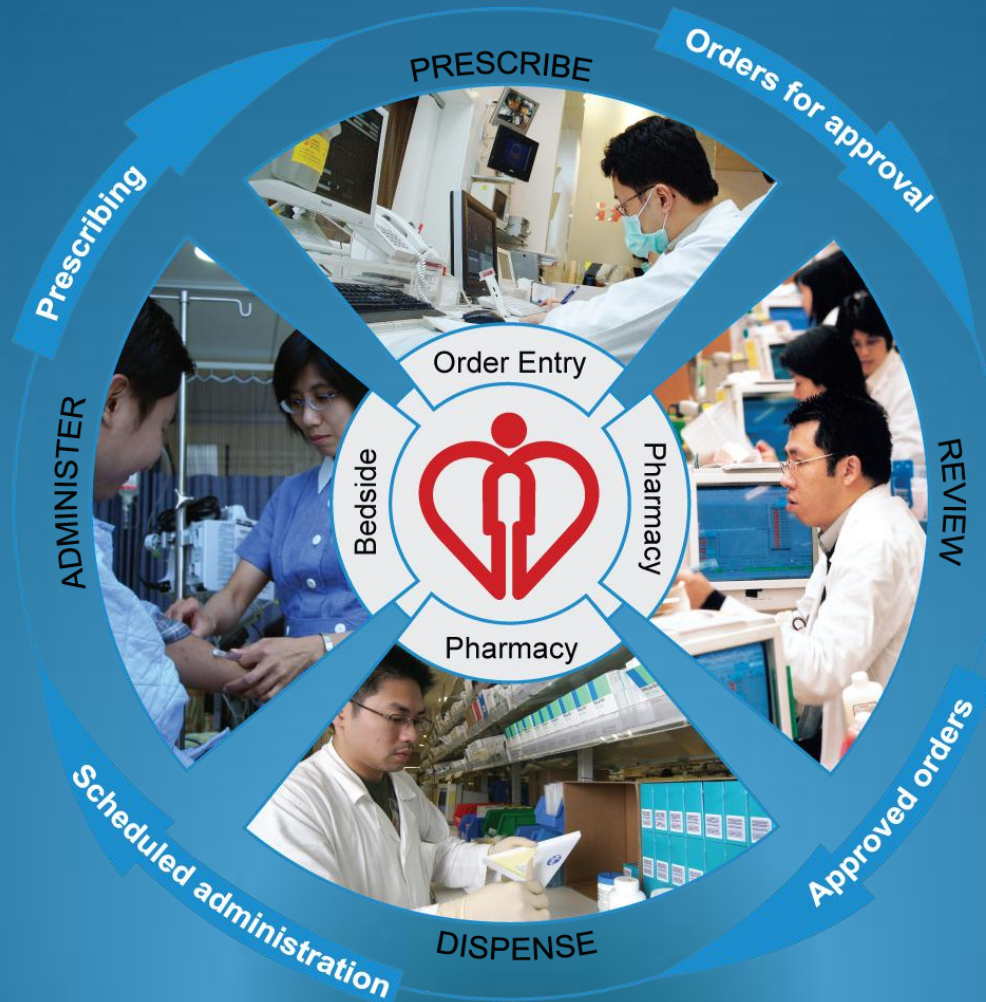
Internal

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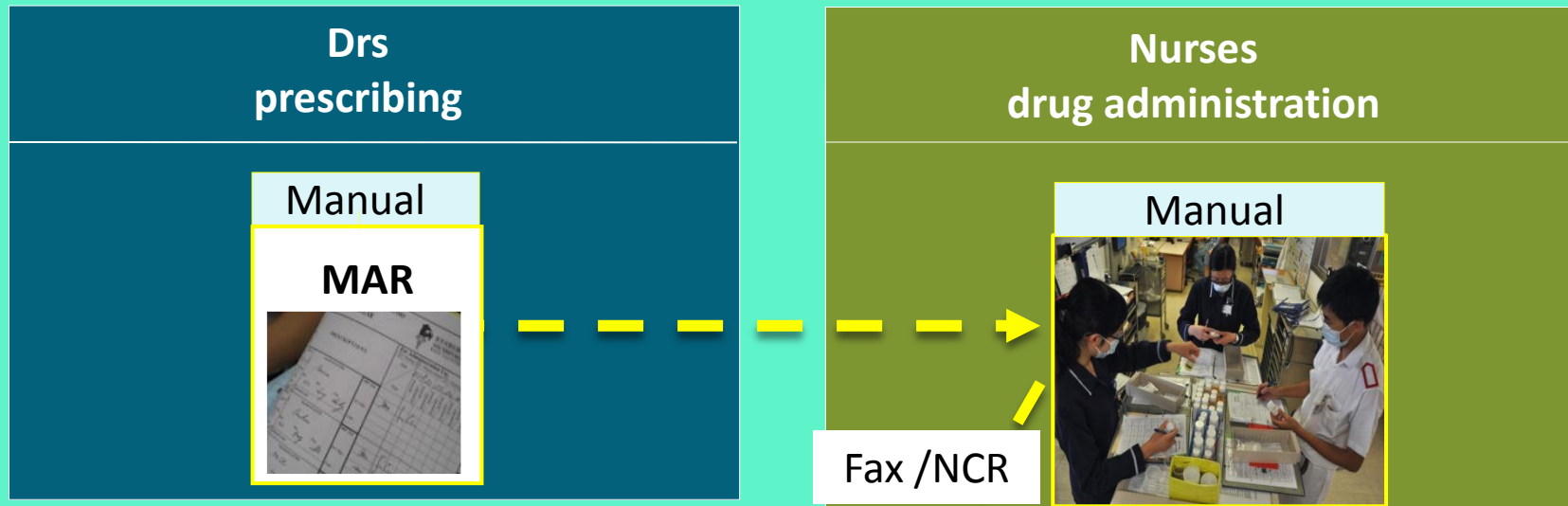
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Close the Loop Concept in the Medication Use Process

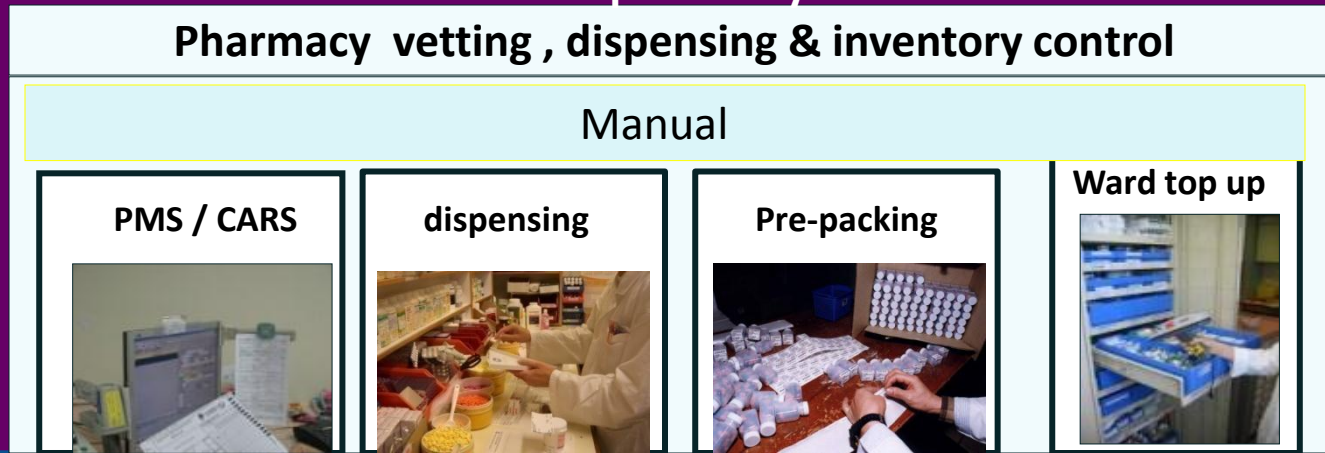


The existing Drug Distribution & Administration System

At the ward level



At the pharmacy



IPMOE project scope

Doctors

pharmacy

Nurses

The screenshot shows the 'Clinical Management System (CMS)' interface. At the top, it displays 'Login ID: SUPERMED (MED)' and 'Login Time: 2009-05-05 17:41:46'. Below this, there's a 'Patient Related Function' section with a 'PATIENT, 587858' entry. The patient's details include 'M 40', 'DOB: 20-Oct-1968', 'UM600606(4)', 'MED D1', 'Adm: 20-Oct-1998', and 'HN98074701(3)'. A 'Drug Name' field is set to 'B-CAVE'. The 'Regimen' is 'B-CAVE' with a 'Start Date' of '1/12/2009' and an 'End Date' of '1/12/2009'. The 'Body surface area' is calculated as 'Height 160 cm, Weight 50 kg, BSA 1.50 m²'. The 'Details' section lists various drugs and their dosages, including 'Bleomycin, 5 units/m² i.v.', 'Lomustine, 100 mg/m² p.o.', 'Doxorubicin, 60 mg/m² i.v.', 'Vincristine, 5 mg/m² i.v.', 'Day 28', 'Bleomycin, 5 units/m² i.v.', 'Lomustine, 100 mg/m² p.o.', 'Doxorubicin, 60 mg/m² i.v.', 'Vincristine, 5 mg/m² i.v.', 'Day 35', and 'Bleomycin, 5 units/m² i.v.'. A note at the bottom states: '* Repeat every 8 weeks'.

The screenshot shows the 'Pharmacy' interface with a table of drugs and their dosages. The table has columns for 'Drug', 'Dosage', 'Frequency', 'Duration', and 'Total Qty Adj./ Issue Qty'. The drugs listed are 'Paracetamol - PANADOL - tablet', 'Phenylephrine - injection', 'Encapsulated Sodium - prefilled syringe', and 'Gentamicin - injection'. The dosages are '500 mg', '100 mg', '40 mg', and '240 mg' respectively. The frequencies are 'qid', 'q8h', 'q24h', and 'q24h' respectively. The durations are '1 Day', '1 Day', '1 Day', and '1 Day' respectively. The total quantities are '1 tablet(s)', '100mg', '40mg', and '240mg' respectively. The table also includes a 'To Do List' and an 'Edit Item' button.

The screenshot shows the 'Nurses' interface with a list of drugs and their dosages. The list includes 'LASIX (FRUSEMIDE) tablet', 'ATENOLOL tablet', 'PARACETAMOL tablet', 'IBUKLIN (IBUCLOPRAMIDE) tablet', 'AUGMENTIN injection 1.2g', and 'GENTAMICIN SULPHATE injection'. The dosages are 'oral: 40mg qm', 'oral: 40mg qid', 'oral: 500mg q8h', 'oral: 500mg q8h', 'parenteral: 1200mg q8h', and 'parenteral: 40mg q12h' respectively. The list also includes a 'Reviewed By' column and a 'Status' column with checkboxes for 'Active' and 'Inactive'.

- Electronic prescribing by clinicians
- Vetting & dispensing with workflow reengineering at Pharmacies
- Drug administration by nurses using BCMA

+ many safety & clinical intelligence checking features
e.g. Prohibit routes that may cause harm or death
(e.g. Vincristine must not be given intrathecally)

Revamp the dispensing process through extensive use of Automation Technologies - to support accurate & efficient unit dose dispensing



PRAZOSIN HCL
2MG TAB
MINIPRESS
2008/04/15
EXP : 2010/10/31
BN : 7434
1

PRAZOSIN HCL
2MG TAB
MINIPRESS
2008/04/15
EXP : 2010/10/31
BN : 7434
2

May cause drowsiness, do not drink alcohol
© 2008 Pharmacia Corporation



Future DDAS model the proposal



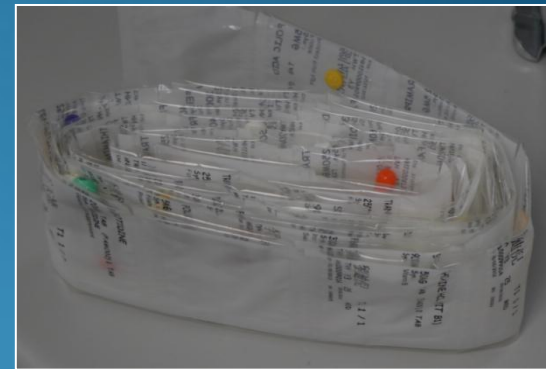
Drug Packages :

1. Pack automatically according to IPMOE order requirement
2. Pack into exact dose quantities
3. Bar-coded with drug identity, batch no., expiry date & each dose quantity
4. Each roll for each drug round for the patient per cubicle (T, T2, T3, etc)
5. Pack in Mono or Multi-drug pouch

Future DDAS at the ward level

– oral solid dose forms

- Oral solid dose forms (82% of all dosage forms) available in (T1, T2, T3, T4) drug trays by drug rounds in drug trolleys for each cubicle
- With double lock drawer for DD
- No need to assemble from ward stock, DD cabinets
- Easy to push around, with computer & bar code scanner



Future DDAS by pharmacy for Injections



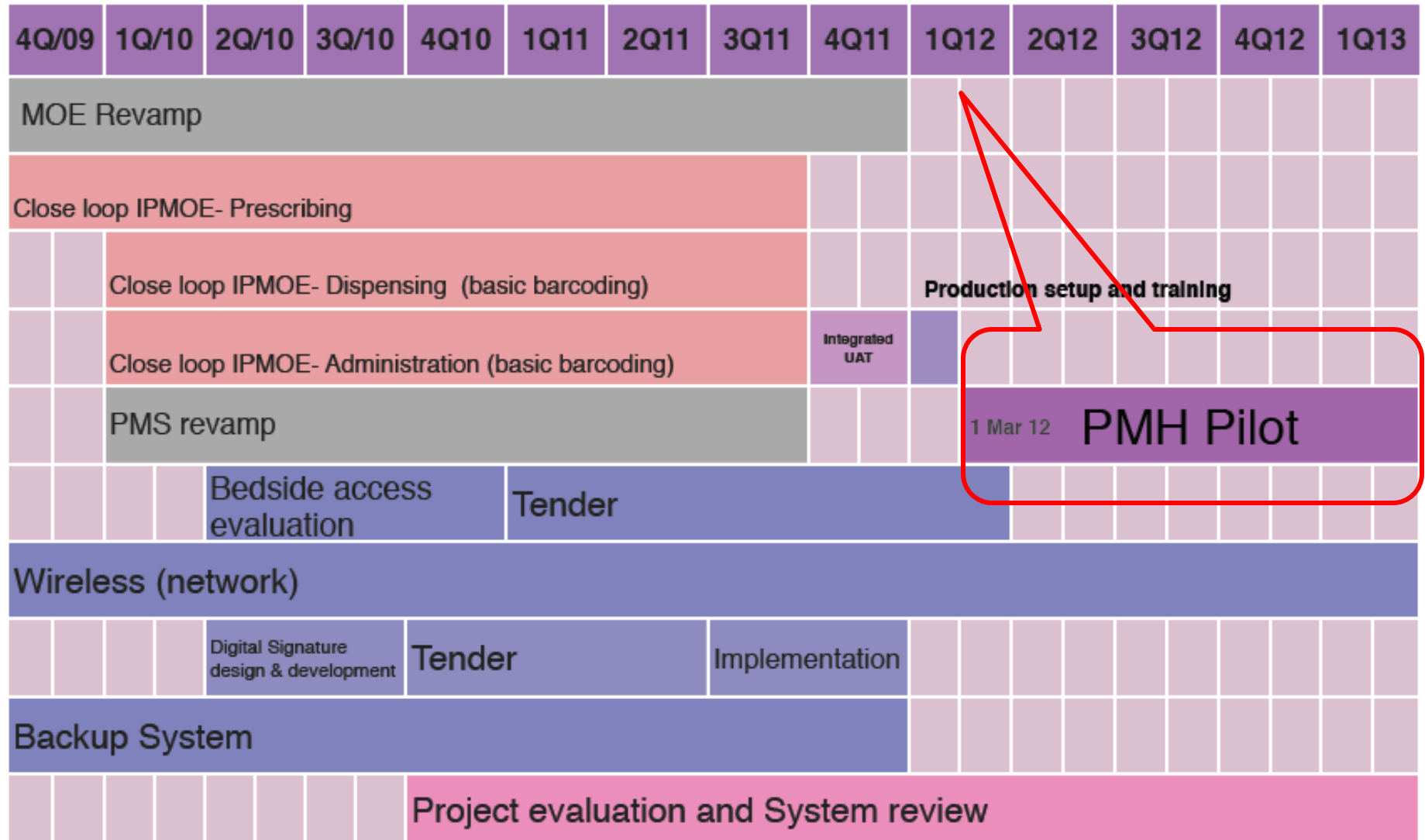
- Extend to paediatric & adult ICU wards, epidural, intrathecal & biological products
- To be further extended to reconstitution of more stable I.V. drugs
- Each drug pack carries bar codes - patient name, drug name & strength, expiry date → ready to administer forms

Bar Coded Medication Administration (BCMA) by nurses

- scan bar code to verify
 - Patient identity & drug identity
- to ensure
 - Right Patient
 - Right Drug
 - Right Route
 - Right Dose
 - Right Time



IPMOE implementation Timeline



GIANT Steps to improve patient and medication safety

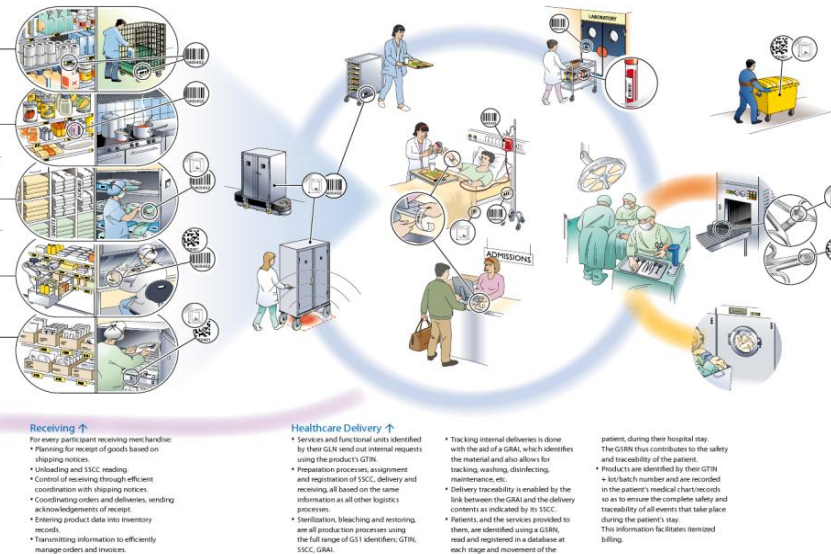
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The Journey is long & tough



“Insanity:
Continuing to do the same
thing and expecting different
results.”

- Albert Einstein