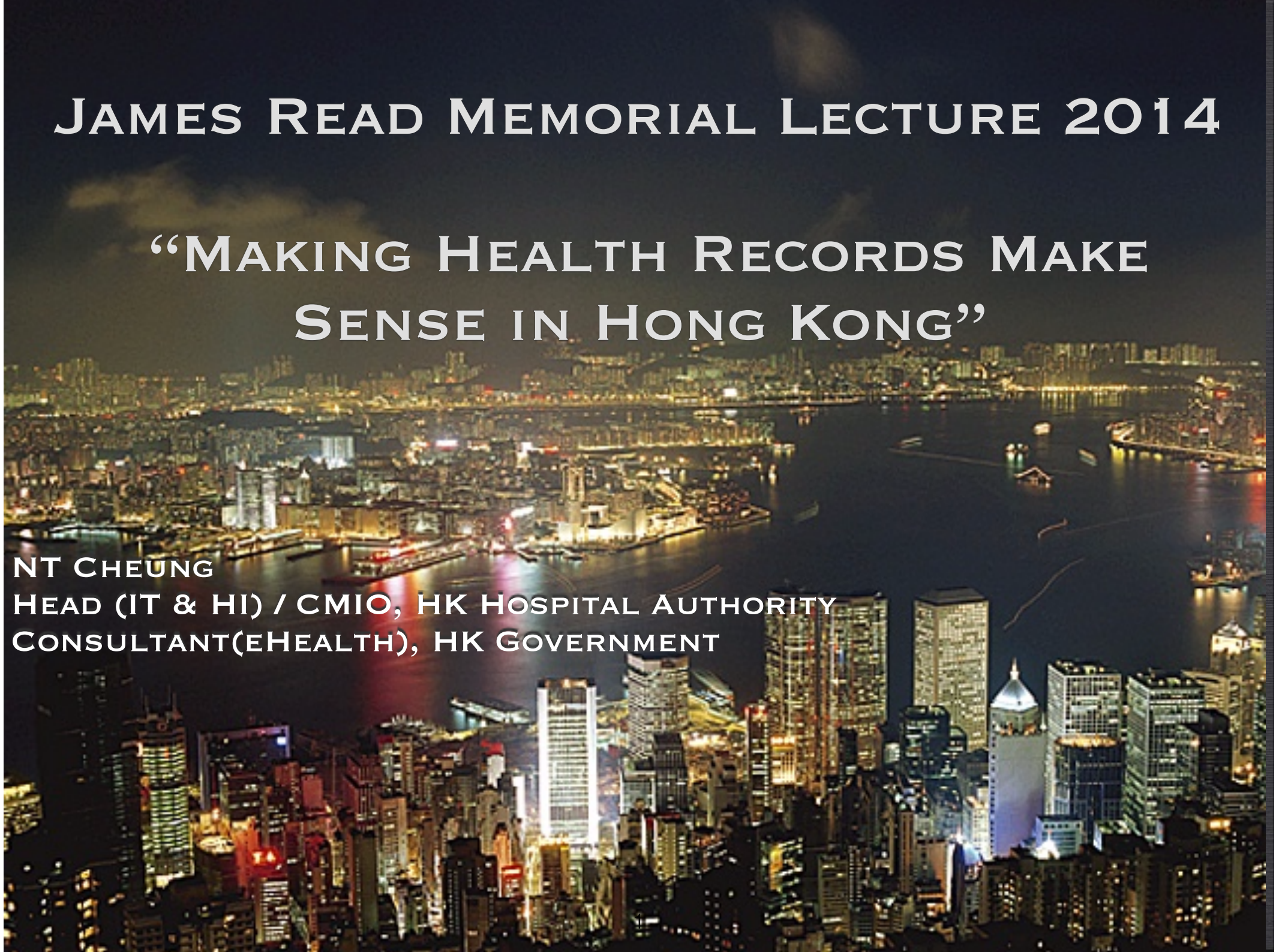
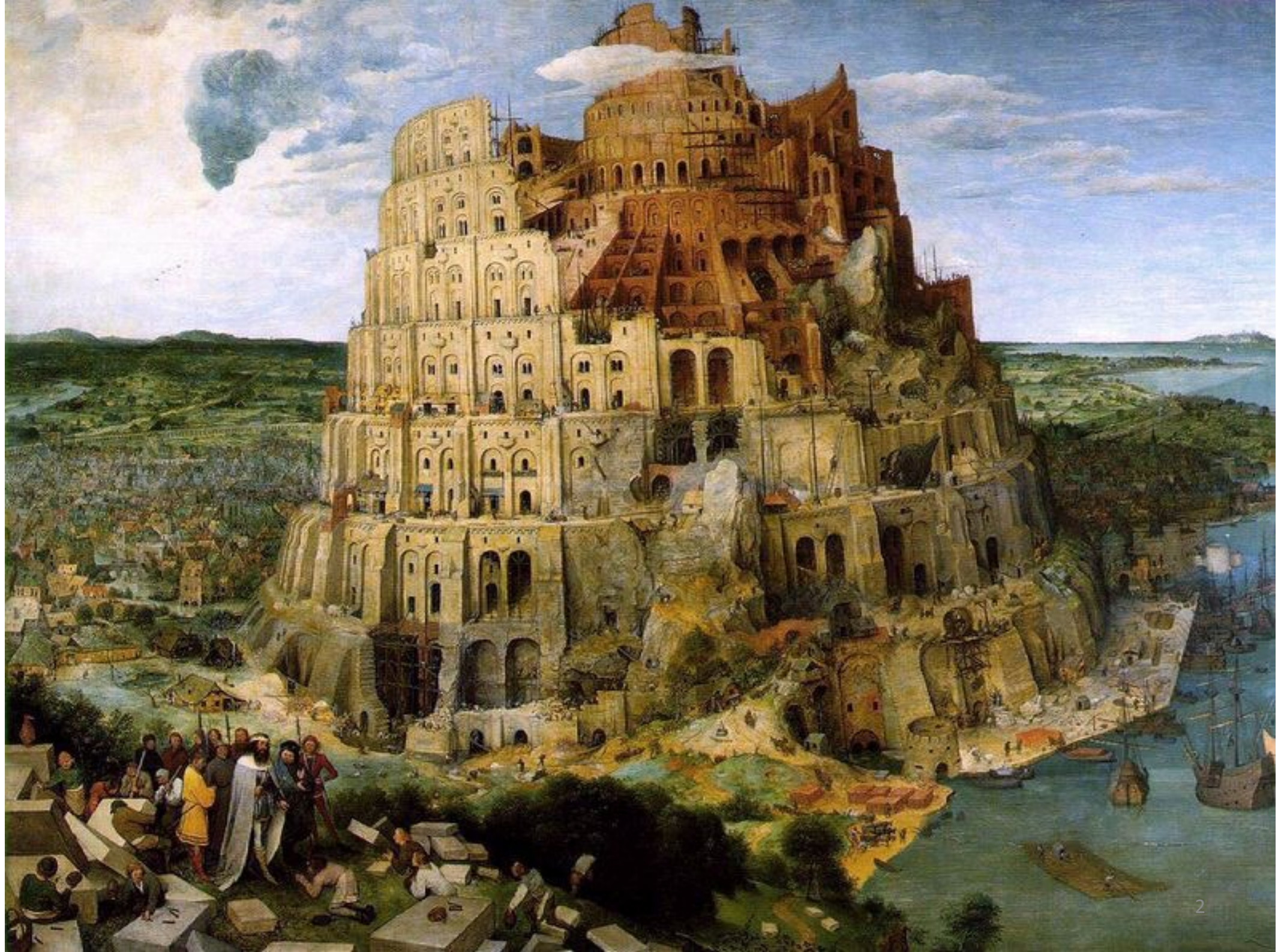


# JAMES READ MEMORIAL LECTURE 2014

## “MAKING HEALTH RECORDS MAKE SENSE IN HONG KONG”

NT CHEUNG  
HEAD (IT & HI) / CMIO, HK HOSPITAL AUTHORITY  
CONSULTANT(EHEALTH), HK GOVERNMENT





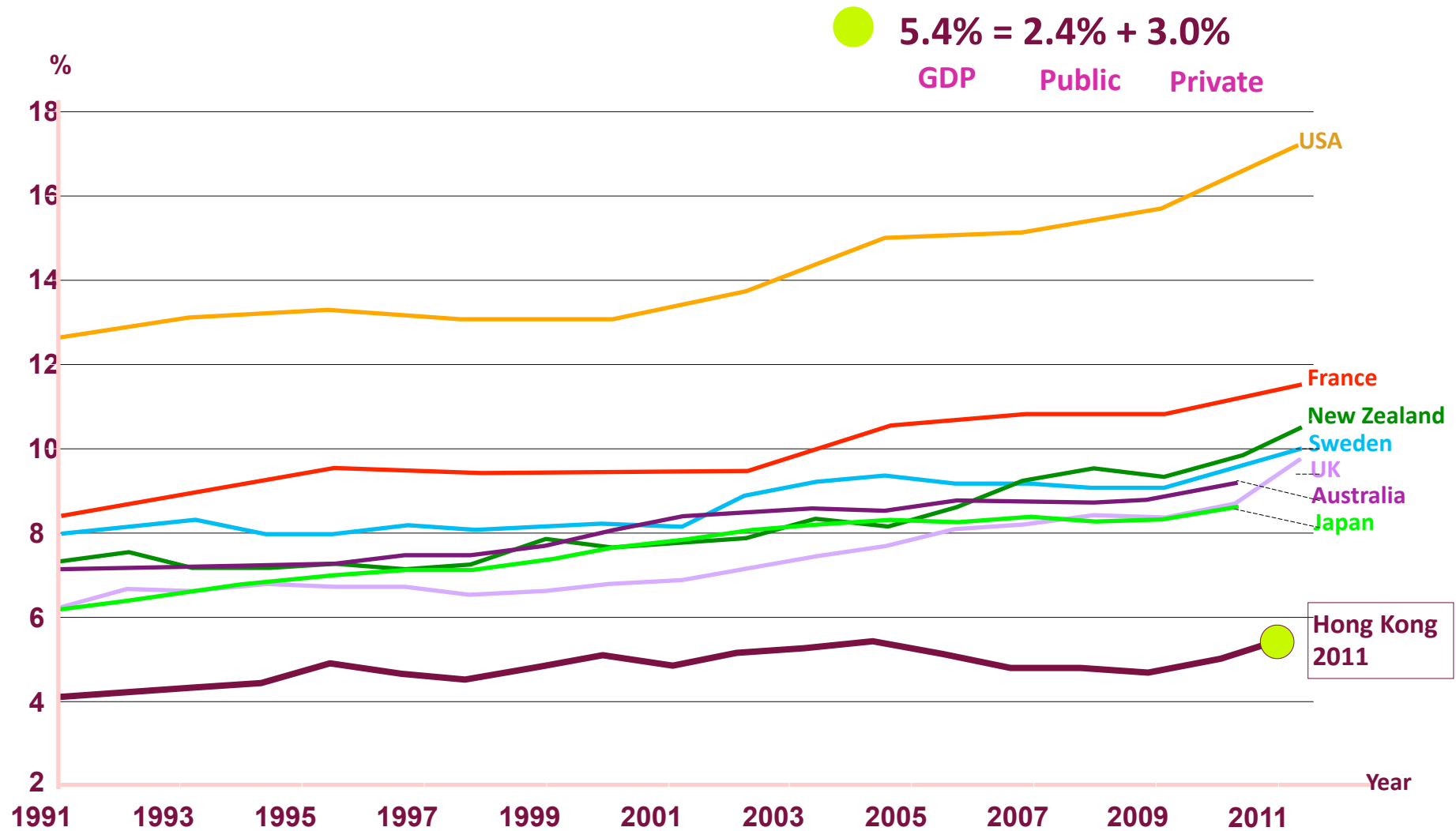
# B.C. 220

## Standardised Chinese Characters

書同文		
齊	𠄎	
楚	𠄎	
燕	𠄎	
韓	𠄎	
趙	𠄎	
魏	𠄎	
秦	馬	



# Total Expenditure on Health as Percentage of GDP



Sources: (1) Census and Statistics Department, 2011 GDP  
 (2) OECD Health Data October 2012

**WALKER ET AL, “THE VALUE OF HEALTH CARE  
INFORMATION EXCHANGE AND INTEROPERABILITY”  
HEALTH AFFAIRS 2005**

---

**“...net savings from national implementation of fully standardized interoperability between providers... could yield \$77.8 billion annually”**

**“...We suspect that the clinical payoff in improved patient safety and quality of care could dwarf the financial benefits projected...”**

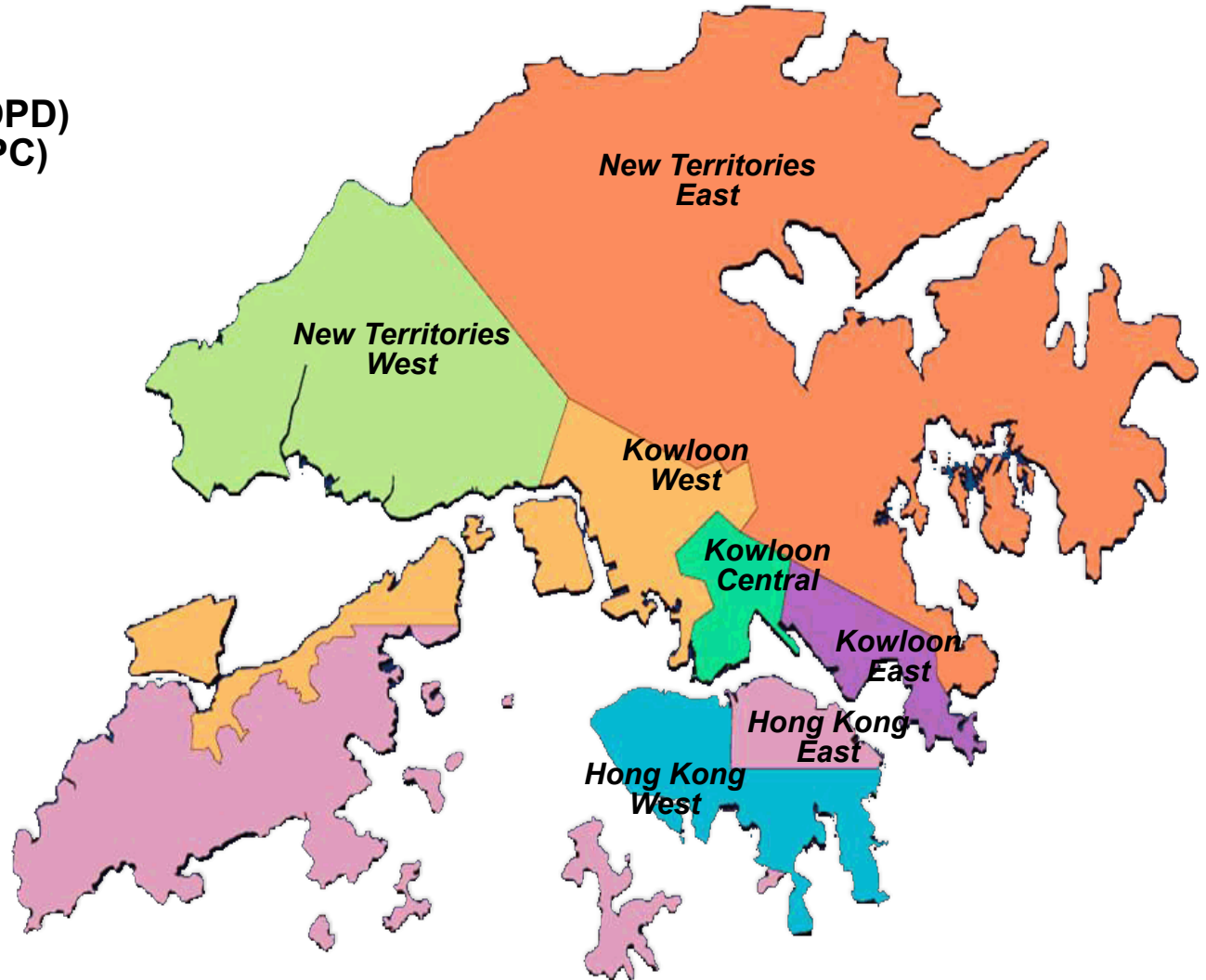
# Key Message

---

**A standardised eHealth system can achieve better, safer, more efficient care delivery on an industrial scale at a reasonable cost**

# Hospital Authority

- ❑ Established 1991
- ❑ 42 Public Hospitals
- ❑ 47 Specialist Outpatient Clinics (SOPD)
- ❑ 73 General Outpatient Clinics (GOPC)
- ❑ Close to 27,500 Beds
- ❑ Around 67,600 Staff
- ❑ Around 22,700 Nurses
- ❑ Around 5,700 Doctors
- ❑ Around HK\$ 46b Annual Operating Budget (~US\$6 billion)
- ❑ 6.10m GOPC Attendances
- ❑ 9.37m SOPD Attendances
- ❑ 2.24m A&E Attendances
- ❑ 1.57m Inpatient and Day Patient Discharges



Source:

1. HA Statistical Report 2012/13
2. HA Information Fact Sheet Jun 2014
3. [www.ha.org.hk](http://www.ha.org.hk)

# eHealth in the HA - The Road Less Travelled

- 1990** “Green fields”
- 1991** Patient administration + Departmental systems
- 1995** **Clinical Management System (CMS)**
- 2000** **Electronic Patient Record (ePR)**
- 2003** eSARS
- 2004** ePR Image Distribution
- 2006** PPI ePR sharing
- 2008** **CMS Phase III**
- 2009** Filmless HA  
**Hong Kong wide eHR**
- 2010** Inpatient MOE
- 2013** Mobile CMS



# ELECTRONIC PATIENT RECORD

病人 MO, SIU YUEN M 83y DOB:12-Feb-1926 A123456(7)

Patient Name MO, SIU YUEN(病人)

Most recent from the left Page 1 of 3 Return to list view Show Request Date and Arrive Date

Hospital Code	UCH	UCH	UCH	UCH	UCH	UCH	UCH
Collect Date	24/07/06 10:31	24/07/06 10:31	24/07/06 10:31	24/07/06	11/04/06 08:48	11/04/06 08:47	11/04/06 08:47

Click the test name for single test view

Volume, Urine, 24 hr	1705				1396		
Sodium			141				142
Potassium			3.8				3.9
Urea			6.6				4.5
Creatinine	77		77	77	88		88
Protein, Total			70				65
Albumin			44				40
Globulin			26				25
Bilirubin, Total			8				8
Alkaline Phosphatase, Total			51 ↓				46 ↓
Alanine Aminotransferase			25				23
Calcium			2.27				2.29
Phosphate			1.23				1.19
Urate							0.426 ↑
Glucose, Fasting		6.5 ↑				5.2	
Protein, Urine, 24 hr	0.10				0.08		
Creatinine, Urine, 24 hr	12233				14513		
Creatinine Clearance, Urine	110				115		
Time	24				24		

Chem Report Image

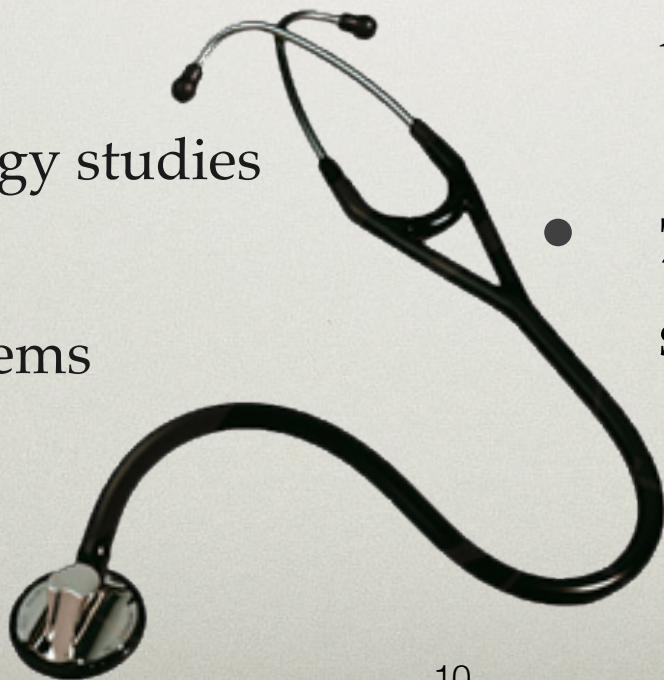
All Laboratories

- Biochemistry
- Haematology
- Microbiology
- Anatomical Pathology
- Immunogenetics
- HLA typing
- Specialty Profile
- Tumour Marker
- In Patient
- Common
- Medical
- DM
- Immunology
- Liver
- Renal
- Thyroid
- Anaesthetic
- SARS
- TBCU
- Abnormal Result
- Numerical
- Non-numerical
- Test Search
- Test Search

# HA'S CLINICAL MANAGEMENT SYSTEM - AN ESSENTIAL CLINICAL TOOL

---

- **9M** patients
- **223M** episodes of care
- **1B** laboratory results
- **115M** radiology studies
- **388M** drug items
- **3.5M** updates / day
- **700K** hits / day
- **Sub-second** response time
- 7x24 > **99.98%** uptime since live run



OVER 15 MILLION SOLD

# THE 7 HABITS OF HIGHLY EFFECTIVE PEOPLE

Powerful Lessons  
in Personal Change

With a New  
Foreword and  
Afterword  
by the Author

"A wonderful book that could change your life."  
—Tom Peters, bestselling author of *In Search of Excellence*

**Stephen R. Covey**

# THE SEVEN PRINCIPLES OF HIGHLY EFFECTIVE INFORMATICIANS

---

1. The customer is always right
2. Medicine is an art and a science
3. Win - Win - Win - Win - Win
4. One step at a time
5. Use it or lose it
6. Focus and prioritize
7. Embrace your informaticians

# Principle 4: One Step at a Time

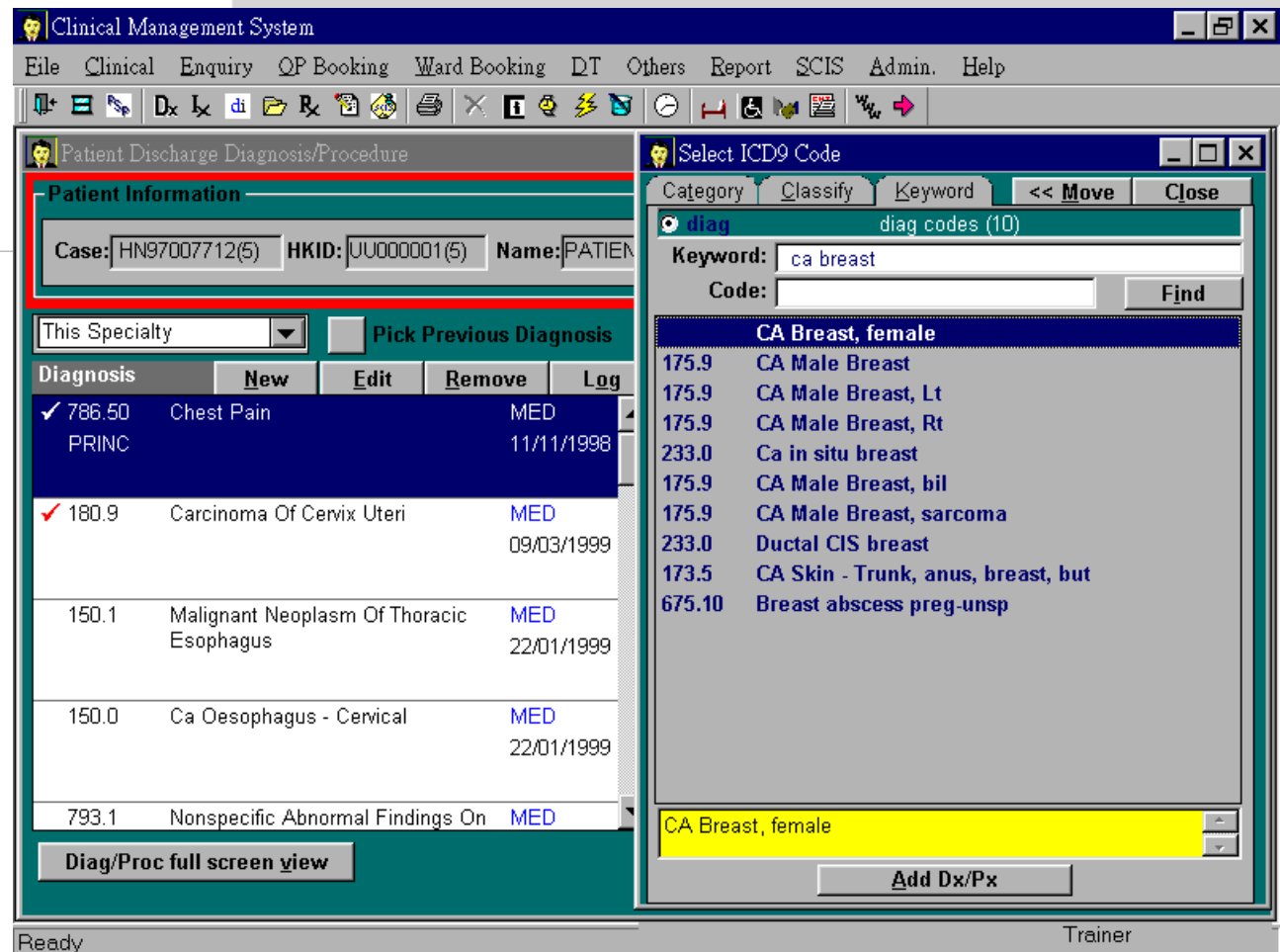


*“Crossing the river, feeling one stone at a time”*

*Deng Xiaoping*

# Clinical documentation in the CMS: (1st Generation) Clinical coding

- ICD codes with extensions
- Clinician friendly terms attached to these codes
  - Multiple input mechanisms



# Clinical documentation in the CMS: (2nd Generation) Clinical Data Framework (CDF)

- Document disease
  - No coding required
- Generic framework with disease specific data

Clinical Data Framework - Lung Cancer

Dx Confirmed 22/Jan/2010 1st Entry 22/Jan/2010 This Entry 22/Jan/2010

* Status	Stage	Site	Relaps
<input type="radio"/> Suspected <input checked="" type="radio"/> Actively under treatment <input type="radio"/> Past history, no active Rx <input type="radio"/> Palliative care/hospice <input type="radio"/> Secondary, primary unknown	IB TNM <i>T2N0M0</i>	<input type="radio"/> Bilat. <input type="radio"/> L <input type="radio"/> R <input type="radio"/> Trachea <input type="radio"/> Carina <input type="radio"/> Main bronchus <input type="radio"/> Upper lobe <input type="radio"/> Middle lobe <input type="radio"/> Lower lobe <input type="radio"/> Contiguous sites <input checked="" type="radio"/> Unspecified site	<input type="checkbox"/> Local relapse <input type="checkbox"/> Regional node relapse <input type="checkbox"/> Liver <input type="checkbox"/> Lung <input type="checkbox"/> Pleura \ Pleural eff <input type="checkbox"/> Bone <input type="checkbox"/> Brain <input type="checkbox"/> Distant lymph node <input type="checkbox"/> Peritoneum \ Ascites <input type="checkbox"/> Skin <input type="checkbox"/> Soft tissue <input type="checkbox"/> Carcinomatosis <input type="checkbox"/> Other site

Clinical Data Framework

ICD-9-CM code	Full Description
162.9	Cancer of bronchus and lung

Diagnosis Procedure HAFM Print Feedback Preference

MDL Pick from Hx New

P ? Patient Discharge Diagnosis

- Essential hypertension
- Cancer of left lung , stage I B - ( T 2 N 0 M 0 ) ; histology: Squamous cell carcinoma - G1 : well differentiated
- Gastritis

# Clinical documentation in the CMS: (3rd Generation) Generic Clinical Documentation (GCD)

- Flexible forms
- Structured data linked to terminology
- Automatic documentation with code generation
- Reuse of data previously entered

Case: HN980779381    Req. Date.:24/04/2006    Status:Ready    ma1    ma.

12. Multiple birth: \*     Yes     No     Unknown  
 No. of infants delivered (both live birth & stillbirth): \*   

13. Birth weight: \*     grams

14. Head circumference at birth \*     cm     unknown

15. Obstetrical maturity: \*     weeks     days     unknown  
 Best est. of maturity: \*     same as obs     weeks  
 +/- 2 wks diff.

**Fill in Section (LBW 1,2,3,4) if birth weight between 401 grams and 1500 grams (inclusive) or maturity between 22 weeks 0 days and 29 weeks 6 days (inclusive)**

16. Died in Delivery Room: \*     Yes     No

17. Neonatal screening:     Yes     No     Unk  
 G6PD:     Normal     Deficiency     Borderline  
 TSH:     Normal     Abnormal    Value:  mIU/L  
 rechecked    Value:  mIU/L

18. Hearing screening:     Yes     No     Unk  
 Method:    
 Right:      Left:

19. Major congenital anomaly: \*  
 Yes     No     Suspected     Unk

Initial history after birth:  
 He was initially hypothermic with warming. HR and blood p  
 Chest, abdomen and CVS exam  
 H'stix on arrival was 1.0, D10 4  
 mg/kg/min

Prev    Next    Templ.    Preview    Save    UnSig

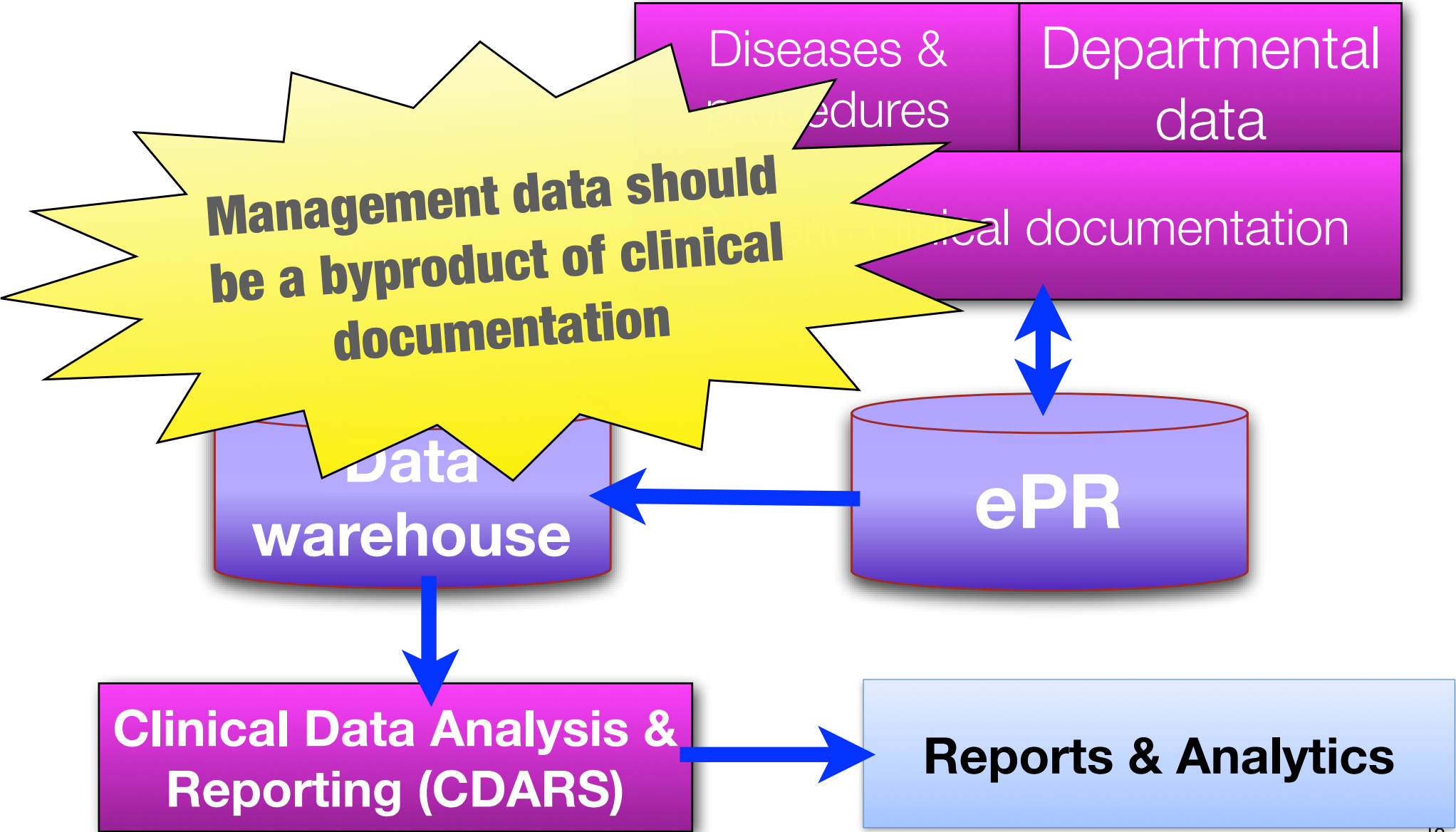


# Principle 5: Use it or Lose it

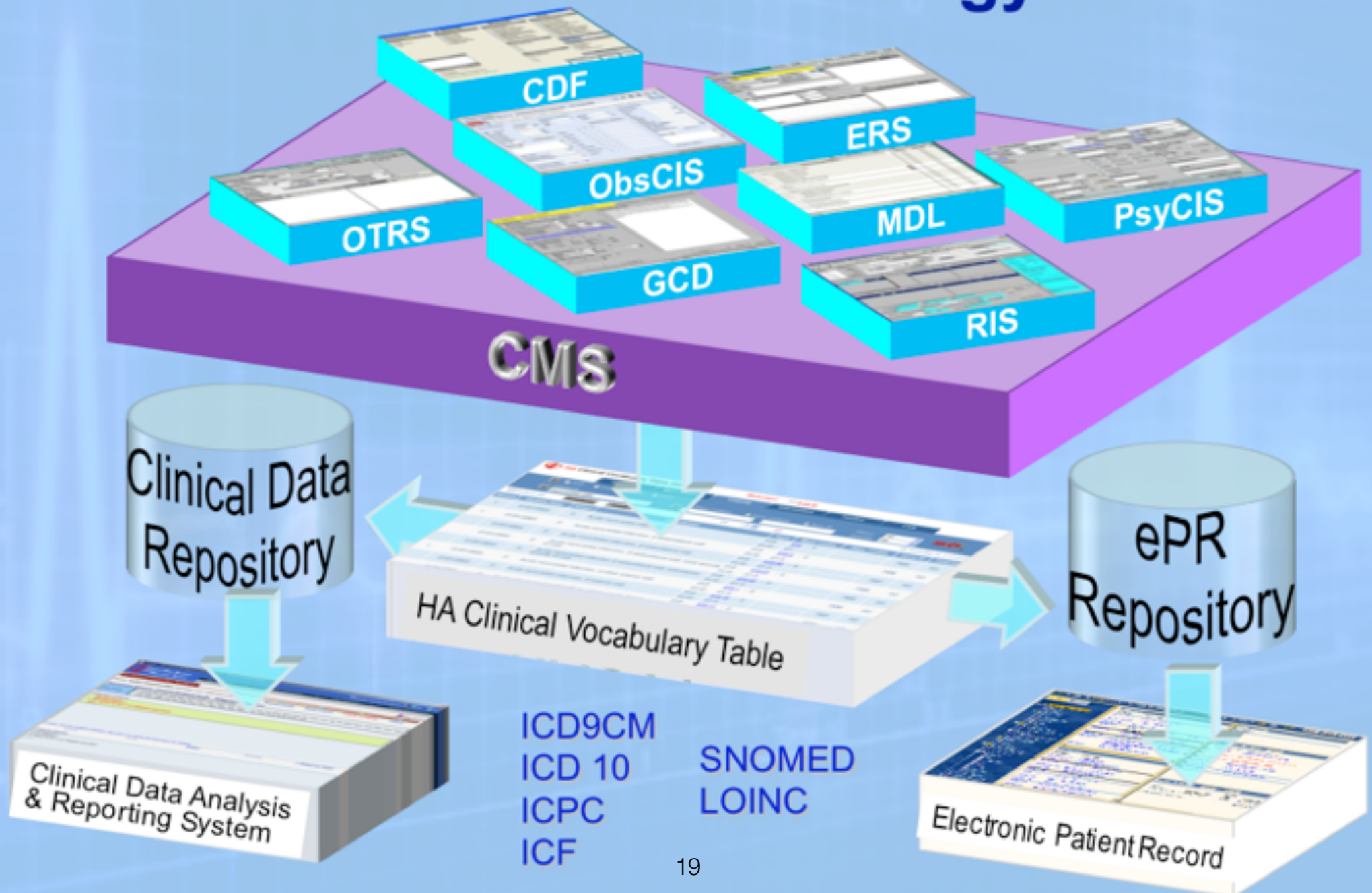
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# Documentation becomes knowledge



# HA-wide Standards & Controlled Medical Terminology



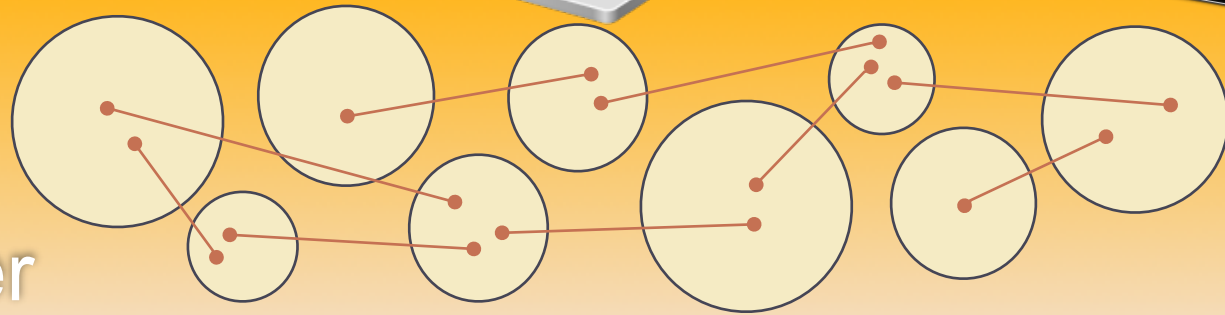
# CMS III: A sustainable architecture

Security & privacy framework

Clients & displays



Service layer



Information standards & architecture

Electronic Patient Record

# HA Information Architecture

*Entities - facts*

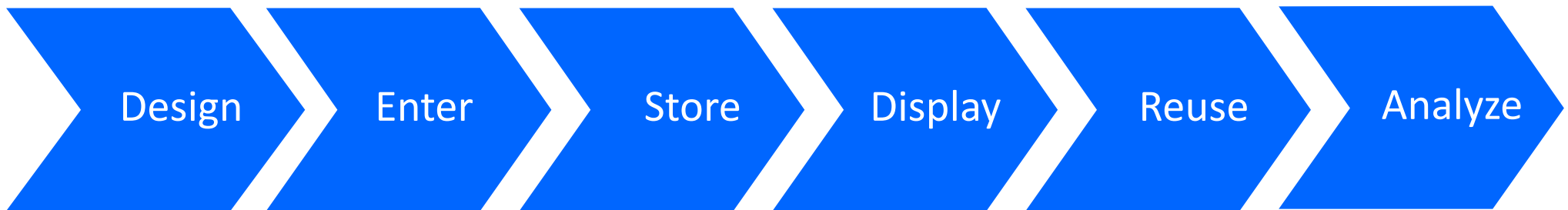
*What does the data mean?*

*Forms - context*

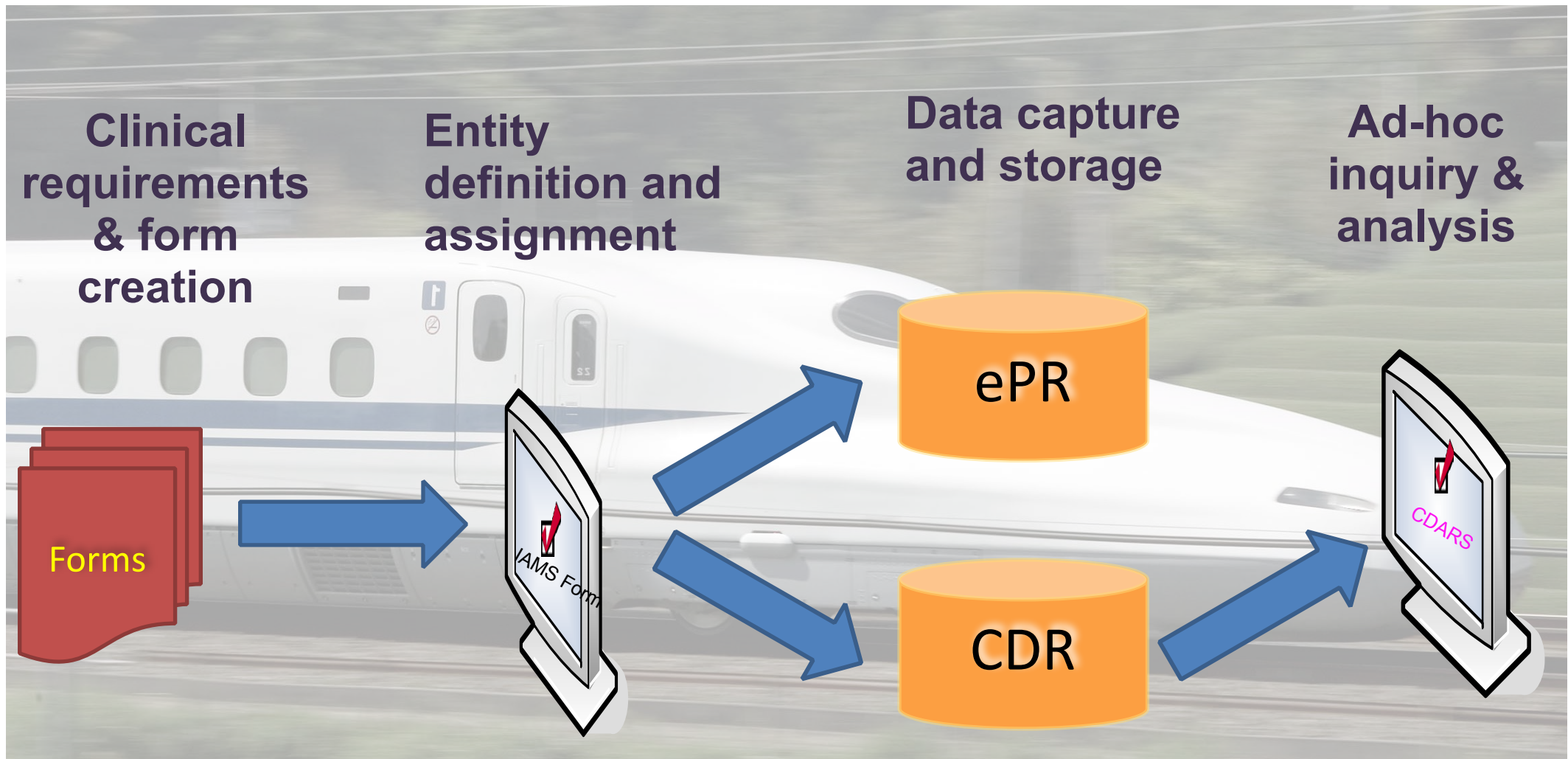
*How should it be interpreted?*

*Format - display*

*How should it be displayed?*



# Generic Clinical Documentation (GCD) Thru' Train



# Example: Nursing Patient Assessment

The screenshot shows a 'Patient Assessment Form' with several sections. At the top, there are tabs for 'Physical Exam', 'Social History', 'Risk Assessment', and 'Functional Assessment (FAS) 1'. The 'Risk Assessment' section is active and contains the following items:

- Infection:** Radio buttons for 'At risk', 'Not at risk', and 'Unknown'. Below are checkboxes for 'Isolation Precaution' types: Airborne, Contact, Droplet, and Reverse Isolation.
- FTOCC:** Radio buttons for 'At risk' and 'Not at risk'. Below are checkboxes for 'Fever', 'Contact', 'Travel', and 'Clustering'. There is also a checkbox for 'Occupational Exposure'.
- Fall:** Radio buttons for 'At risk' and 'Not at risk'.
- Pressure Ulcer:** Radio buttons for 'At risk' and 'Not at risk'. This section is highlighted with a red box.
- Missing:** Radio buttons for 'At risk' and 'Not at risk'.
- Suicide:** Radio buttons for 'At risk' and 'Not at risk'. Below are checkboxes for 'Patient was admitted because of suicidal attempt or idea' and 'Patient expresses suicidal idea or self-harm behaviour'.

There are also 'Remarks:' text boxes for Infection, FTOCC, and Fall. At the bottom, there are 'Print' and 'Undo' buttons.

## Patient Assessment Form

- Physical Examination
  - Vital signs
  - Body measurement
  - Urinalysis
  - Level of consciousness
  - MEWS
- Social History
  - Education
  - Religion
  - Household members, etc
- Risk Assessment
  - Infection
  - FTOCC
  - Fall
  - **Pressure Ulcer**
  - Missing
  - Suicide
- Functional Assessment

Is patient is at risk of pressure ulcer upon admission assessment?

Pressure Ulcer:  At risk  Not at risk

All Entities

In Use (V3)	
Name	Entity/Term ID
▶ Patient Assessment Form - nursing	1002018
▶ Physical Exam	
▶ Social History	
▶ Risk Assessment	
▶ Infection	
▶ Infection - precaution	
▶ Precaution - remarks	
▶ FTOCC	
▶ FTOCC - Criteria	
▶ FTOCC - remarks	
▶ Fall	
▶ Fall - remarks	1
▶ Pressure Ulcer	1002625
▶ At risk	
▶ Not at risk	
▶ Missing	
▶ Patient was admitted because of suicidal attempt or idea	1
▶ Patient expresses suicidal idea or self-harm behaviour	
▶ Disclosure by relatives / friends that patient has suicidal inclination	
▶ Functional Assessment (FAS) 1	
▶ FAS 2	
▶ FAS 3	
▶ FAS 4	
▶ Non-display page	

Entity ID	1002625
Entity Description	Pressure ulcer risk indicator
Source Description	Pressure Ulcer
Source Name	rb_pressure_ulcer_risk
Validation Rule	
Source Data Type	Coded Entry (CE)
Selection Type	Single (S)
Mask	
Length	
Tab Order	940
Source Data Definition	
Entity Data Definition	Indicator on whether the patient has risk of having pressure ulcer
Source Remarks	
Maxim	▶ Pressure Ulcer 1002625
Inher	
Entity	
Subs	▶ At risk
Subs	▶ Not at risk

**Step 1:**  
 Define each entity on the form

- Reuse existing entity if appropriate, or
- Create new entity if the existing entity is not suitable



Report Search Result

Patient Assessment Form - nursing

In Progress (V2)

Name
▲ Patient Assessment Form - nursing
▶ Physical Exam
▶ Social History
▲ Risk Assessment
▶ Risk of infection
▶ Isolation Precaution
Isolation precaution - remarks
▶ Risk of infection - FTOCC
▶ FTOCC surveillance
FTOCC - remarks
▶ Risk of fall
Risk of fall - remarks
▲ Risk of pressure ulcer
At risk
Not at risk
▶ Risk of missing
▶ Suicidal attempt or idea on admission
▶ Suicidal idea or self-harm behaviour
▶ Suicidal inclination - disclose by relatives/ friends
▶ Functional Assessment (FAS) 1
▶ FAS 2
▶ FAS 3
▶ FAS 4
▶ Non-display page

Name	Entity/Term ID
▲ Patient Assessment Form - nursing	1002018
▶ Physical Exam	
▶ Social History	
▲ Risk Assessment	
▶ Infection	1002619
▶ Infection - precaution	1002620
Precaution - remarks	1002621
▶ FTOCC	1002622
▶ FTOCC - Criteria	1004112
FTOCC - remarks	1002623
▶ Fall	1002326
Fall - remarks	1002624
▲ Pressure Ulcer	1002625
At risk	
Not at risk	
▶ Missing	1002626
▶ Patient was admitted because of suicidal attempt or idea	1002627
▶ Patient expresses suicidal idea or self-harm behaviour	1002628
▶ Disclosure by relatives / friends that patient has suicidal inclination	1002629

Save Cancel

Criteria List

- ▶  Patient Assessment Form - nursing
  - ▶  Signed (Y/N)
  - ▶  Physical Exam
  - ▶  Social History
  - ▶  Risk Assessment
    - ▶  Risk Assessment
      - ▶  Risk of infection
      - ▶  Isolation Precaution
      - ▶  Risk of infection according to FTOCC indicator
      - ▶  Risk of fall
      - ▶  Risk of pressure ulcer
        - At risk
        - Not at risk
      - ▶  Risk of missing
      - ▶  Patient was admitted because of suicidal attempt or idea
      - ▶  Patient expresses suicidal idea or self-harm behaviour
      - ▶  Disclosure by relatives / friends that patient has suicidal inclination
    - ▶  Functional Assessment (FAS) 1

>> Add  
<< Remove

Select the criteria in 'Criteria List'

Risk of pressure ulcer

At risk

Not at risk

Selected Criteria

Risk of pressure ulcer in (

- At risk
- Not at risk

1 )

[Edit]

---

Selected Criteria

Risk of pressure ulcer in (

- At risk
- Not at risk

1 )

[Edit]

Key:  Column Group / Folder  Column  Value / Query  
 allow multiple values  do not allow multiple values

\*Press 'Ctrl' for multiple selection.

X Close

U Reset

← Add Criteria

# CDARS Report

PAS: Risk of pressure ulcer (Patient Assessment Form - nursing (PAS) (By Date of assessment))	At risk	Not at risk	Row Total
Institution (EIS)	No. of Forms - Patient Assessment Form - nursing (Patient Assessment Form - nursing (PAS) (By Date of assessment))	No. of Forms - Patient Assessment Form - nursing (Patient Assessment Form - nursing (PAS) (By Date of assessment))	No. of Forms - Patient Assessment Form - nursing (Patient Assessment Form - nursing (PAS) (By Date of assessment))
	<b>1</b> 4944	<b>2</b> 41737	46681
Grand Total :	4944	41737	46681

No. of forms with Pressure ulcer risk = 4944

No. of forms with no Pressure ulcer risk = 41737

**1** + **2**

# Standardisation for better presentation

	TMH 15/01/2011	NDH 16/02/2011	PWH 18/04/2011	AHN 13/05/2011	PYN 16/07/2011	KWH 11/09/2011
Sodium	---	134 ↓	140	---	138	142
Potassium	---	4.6	4.7	---	5.0	4.6
Chloride	---	102	107	---	106	110
Urea	---	6.2	7.9 ↑	---	8.1 ↑	7.8 ↑
Creatinine	---	77	75	---	76	80
Protein, Total	51 ↓	---	50 ↓	47 ↓	---	44 ↓
Albumin	26 ↓	---	26 ↓	25 ↓	---	22 ↓
Bilirubin, Total	6	---	6	4	---	6

## Without Standardisation

	TMH	NDH	PWH	AHN	PYN	KWH
BIL	6					
BIL						
TB				4		
TBIL			6			6

# ROLES OF TERMINOLOGY IN HA

---

- Supports information architecture
- Improves data presentation
- Assist data retrieval / reporting
- Facilitate decision support
- Facilitate hospital management
- Enables new modes of care delivery

# HARRPE (HOSPITAL ADMISSION RISK REDUCTION PROGRAMME FOR THE ELDERLY )

RISK STRATIFICATION FOR  
ELDERLY PATIENTS

TARGETED INTERVENTION BY  
CALL CENTRE NURSES



# Hospital Admission Risk Reduction Programme for the Elderly (HARRPE)

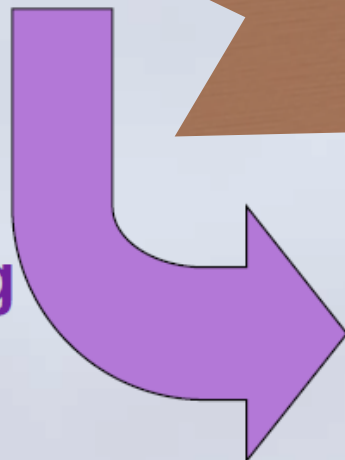
## Model development and validation

Training Dataset  
**1.37 million index episodes of target subjects in 2006**

4 Validation Datasets  
**4 quarterly cohorts in 2006 each with a complete set of over 0.3 million index episodes)**

14 Predictor Variables  
HARRPE score

Model building



Model



Model validation

# Community Health Call Centre (CHCC)

- Identifying at-risk patients from the total population

- Delivering the patient lists to appropriate care providers in a timely fashion

- Enabling new models of care delivery





# Community Health Call Centre (CHCC)

- 2007** High risk elderly (HARRPE)
- 2011** Mental Health Direct
- 2012** Chronic Disease Management
- 2013** Defaulter tracing



# Data Retrieval Using SNOMED Hierarchy

Search Organism by:	Operator	Keyword	
Keyword	Contain	FUNGUS	<input checked="" type="checkbox"/> Display Organism Defined In HA Only

Search Result: (Organism Defined In HA Only)

<ul style="list-style-type: none"> <li>Organism (Defined In HA Only)           <ul style="list-style-type: none"> <li>Fungus               <ul style="list-style-type: none"> <li><input type="checkbox"/> Acremonium alabamense</li> <li><input type="checkbox"/> Acremonium blochii</li> <li><input type="checkbox"/> Acremonium falciforme</li> <li><input type="checkbox"/> Acremonium kiliense</li> <li><input type="checkbox"/> Acremonium potroni</li> <li><input type="checkbox"/> Acremonium recifei</li> <li><input type="checkbox"/> Acremonium roseogriseum</li> <li><input type="checkbox"/> Acremonium species</li> <li><input type="checkbox"/> Acremonium strictum</li> <li><input checked="" type="checkbox"/> Ajellomyces capsulata                   <ul style="list-style-type: none"> <li><input type="checkbox"/> Histoplasma capsulatum</li> </ul> </li> <li><input checked="" type="checkbox"/> Alternaria species                   <ul style="list-style-type: none"> <li><input type="checkbox"/> Alternaria alternata</li> <li><input type="checkbox"/> Alternaria infectoria</li> </ul> </li> <li><input type="checkbox"/> Anxiopsis fulvescens</li> <li><input type="checkbox"/> Anxiopsis sterocaria</li> </ul> </li> </ul> </li> </ul>
--

Selected Organism Criteria List:

Organism in (
1 • Fungus

LIS Culture - Reference Date (Calendar Year)	2010		2011	
	No. of Episodes	No. of Episodes Headcounts	No. of Episodes	
LIS Culture - Organism (ePR Description)				
Aspergillus niger				<u>1</u>
Aureobasidium species				<u>1</u>
Candida albicans	<u>94</u>	91		<u>84</u>
Candida dubliniensis				<u>1</u>
Candida famata	<u>1</u>	1		
Candida glabrata	<u>34</u>	34		<u>48</u>
Candida guilliermondii				<u>2</u>
Candida krusei	<u>2</u>	2		<u>3</u>
Candida lipolytica				<u>1</u>
Candida lusitanae	<u>1</u>	1		<u>1</u>
Candida parapsilosis	<u>31</u>	27		<u>19</u>
Candida species				<u>3</u>
Candida tropicalis	<u>27</u>	27		<u>25</u>
Cryptococcus neoformans	<u>12</u>	11		<u>4</u>
Fusarium solani	<u>1</u>	1		
Histoplasma capsulatum	<u>1</u>	1		
Malassezia pachydermatis				<u>1</u>
Malassezia species				<u>1</u>
Penicillium marneffeii	<u>14</u>	14		<u>8</u>
Trichosporon species				<u>34</u> <u>1</u>
<b>Grand Total :</b>	<b>214</b>	<b>206</b>		<b>198</b>

● Keyword matched result

● Related search result

\* Organisms are defined in SNOMED

# MOVING FORWARD

---

- SNOMED CT for clinical decision support
  - e.g. antibiotic stewardship
- To explore referencing all clinical data and entities using SNOMED CT / LOINC

# Multiple similar entities

Entity ID	Full Description
1001726	<u>Home systolic blood pressure (mmHg) monitoring - maximum</u>
1001725	<u>Home systolic blood pressure monitoring (mmHg) - minimum</u>
102215	<u>Systolic blood pressure (mmHg)</u>
102396	<u>Systolic blood pressure (mmHg) - 1 month follow up</u>
102495	<u>Systolic blood pressure (mmHg) - 12 month follow</u>
102334	<u>Systolic blood pressure (mmHg) - 1st visit</u>
102429	<u>Systolic blood pressure (mmHg) - 3 month</u>
102462	<u>Systolic blood pressure</u>
104109	<u>Worst blood pressure sy</u> <u>hours after Intensive Ca</u>
104110	<u>Worst blood pressure sy</u> <u>hours after Intensive Ca</u>

The image displays several overlapping screenshots of clinical data entry forms. One prominent form is titled "One Month Follow Up" and includes fields for "Assessment date", "Follow up type", "Centre's name", and "Actual quit date". Another form, titled "Vital Signs and Observations", contains numerous input fields for physiological parameters such as "Temp.", "Pulse", "BP", "CVP", "RR", "SpO2", "Coughing", and "Sputum". A third form, titled "physiology", features a table with columns for "high" and "low" values for parameters like "Core temp", "Heart rate", "Resp rate", "On ventilator?", "Mean BP", and "Sys/Dia mmHg".





THE HONG KONG WIDE  
ELECTRONIC HEALTH RECORD

# Without eHR



HA



Doctors and Nurses



Other healthcare professionals



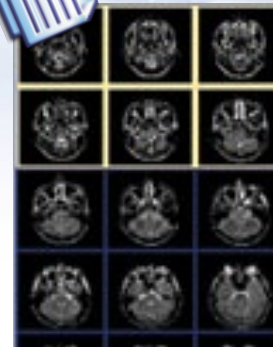
Private Hospitals



DH



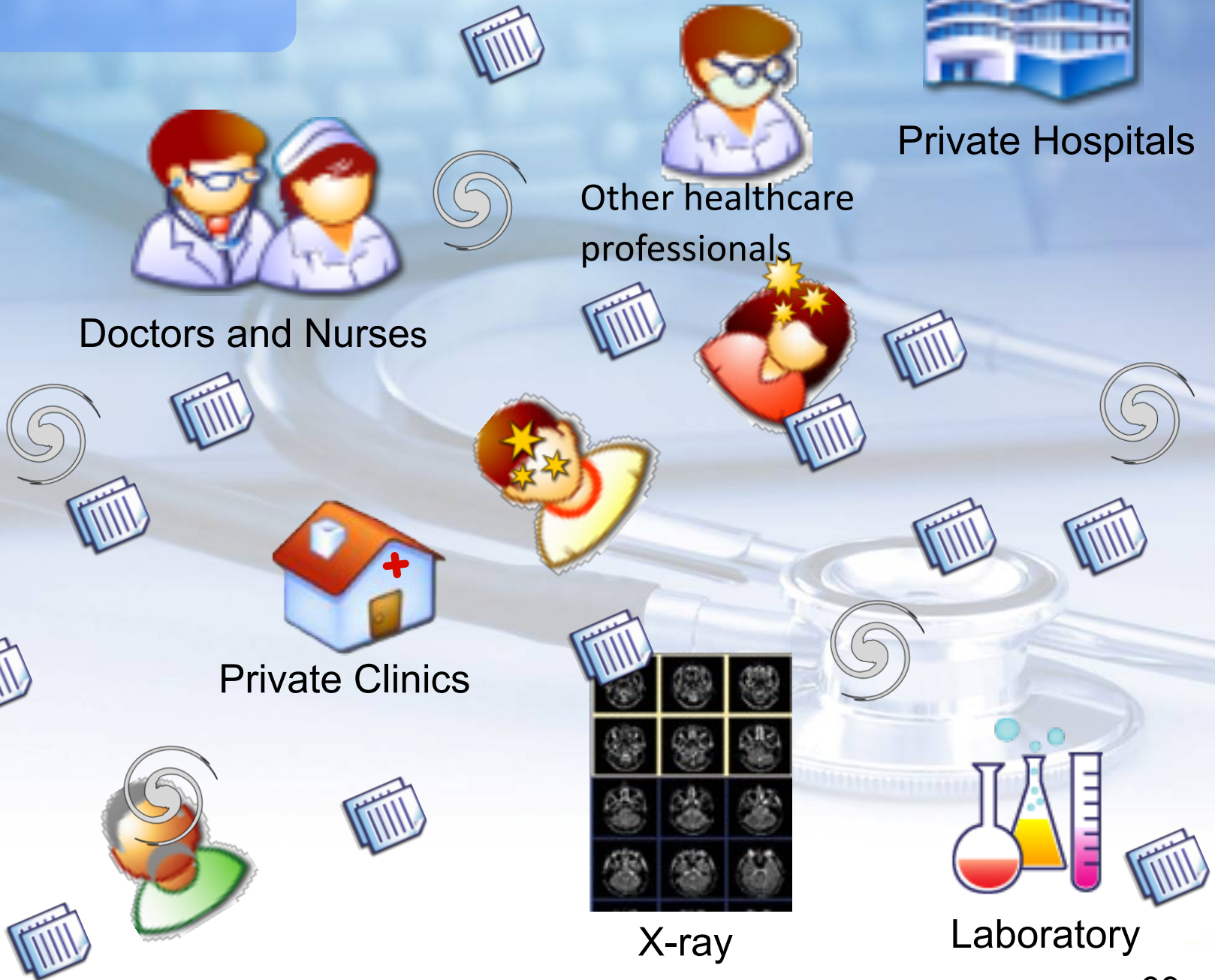
Private Clinics



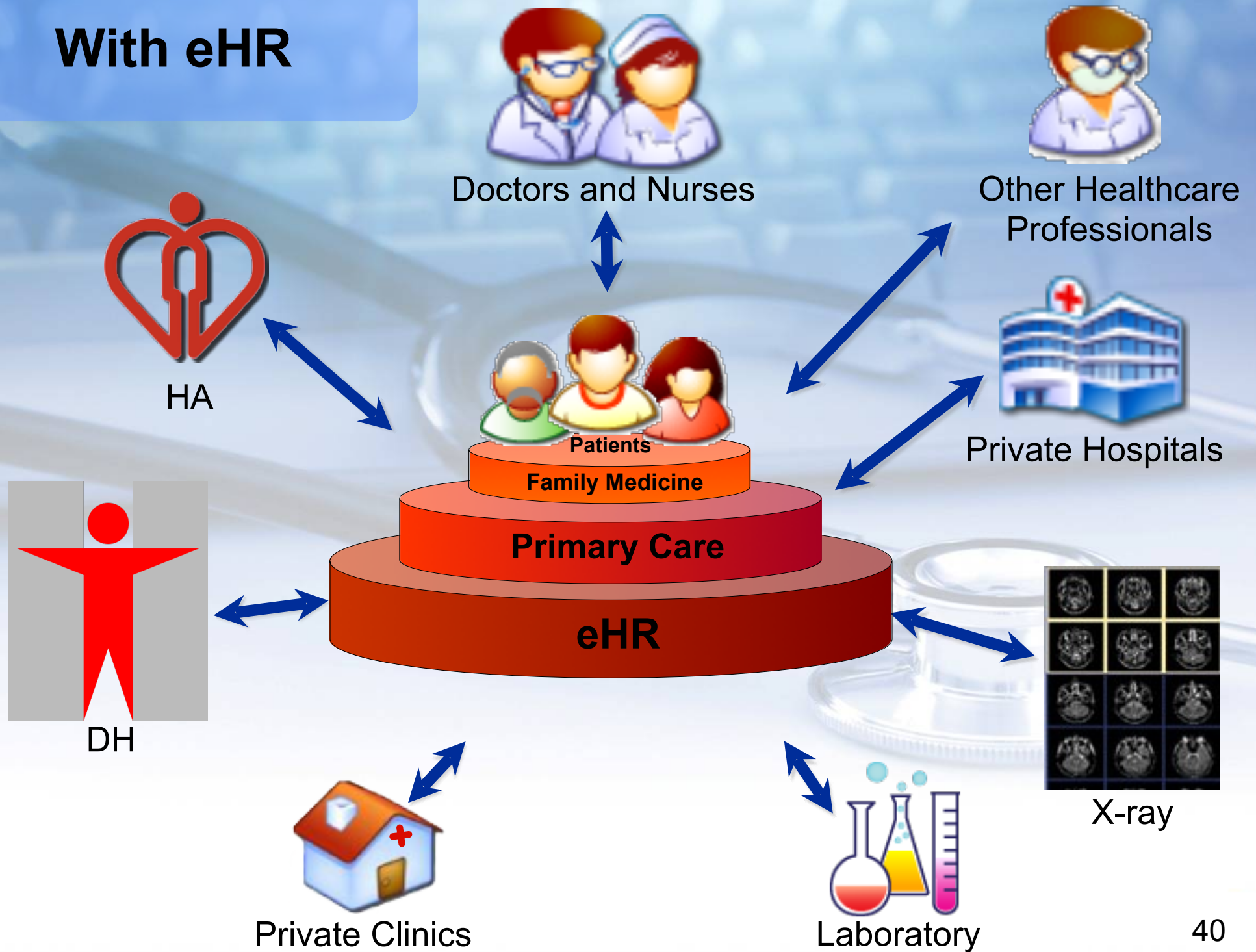
X-ray



Laboratory

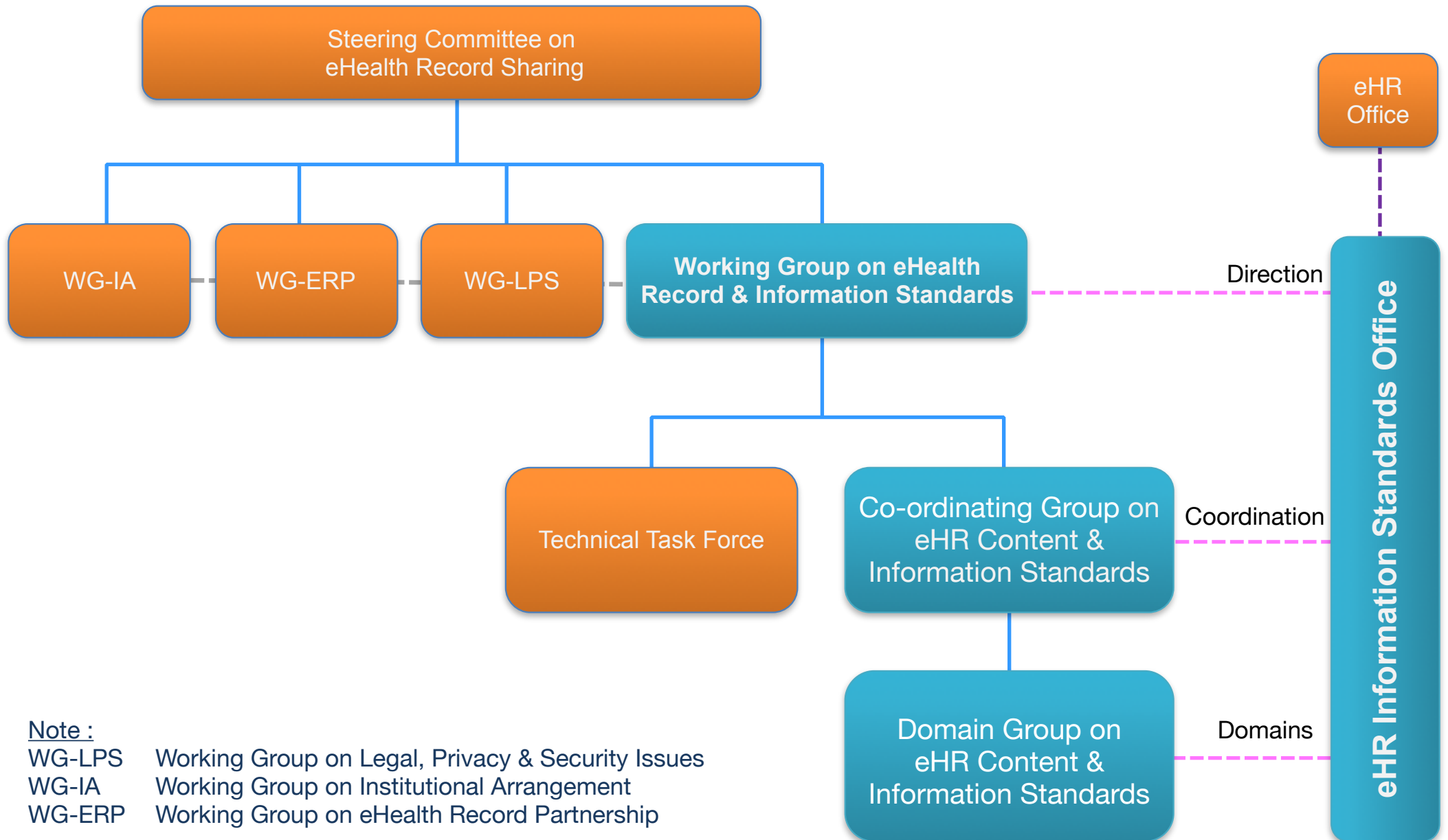


# With eHR

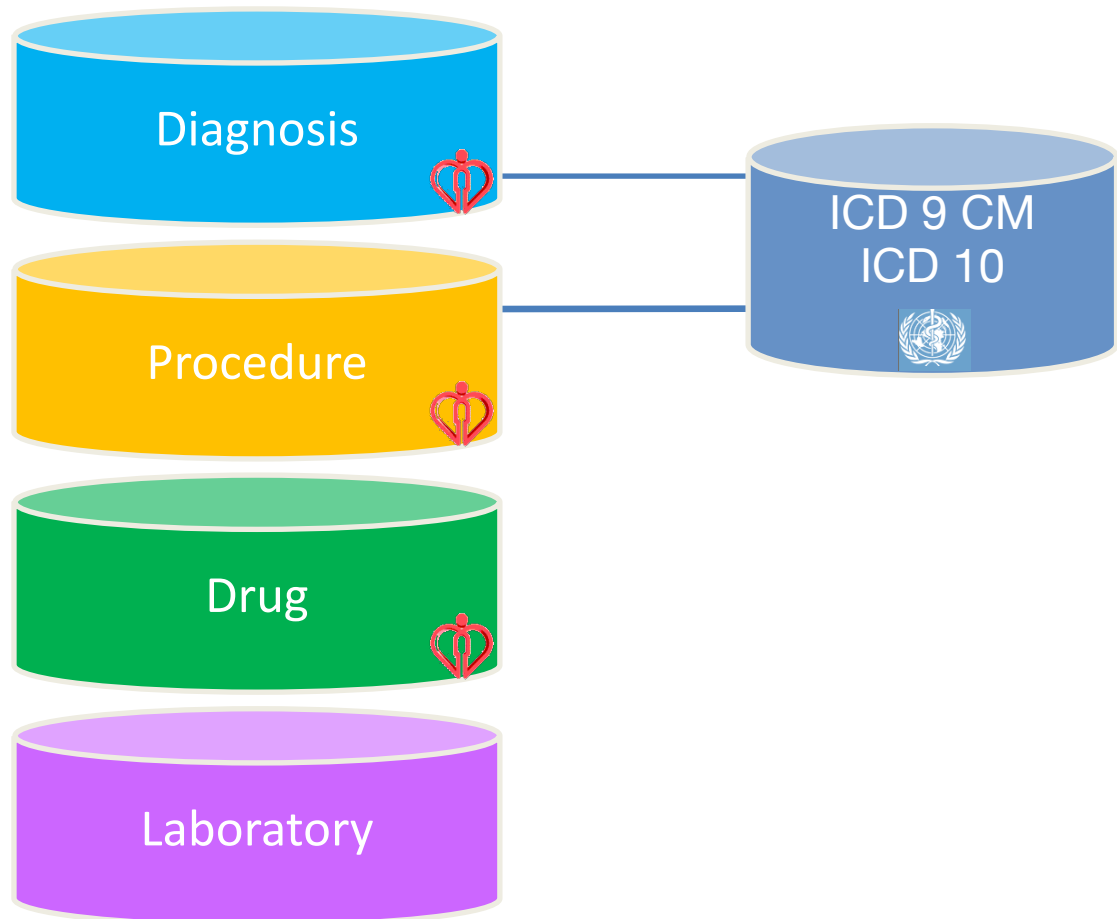




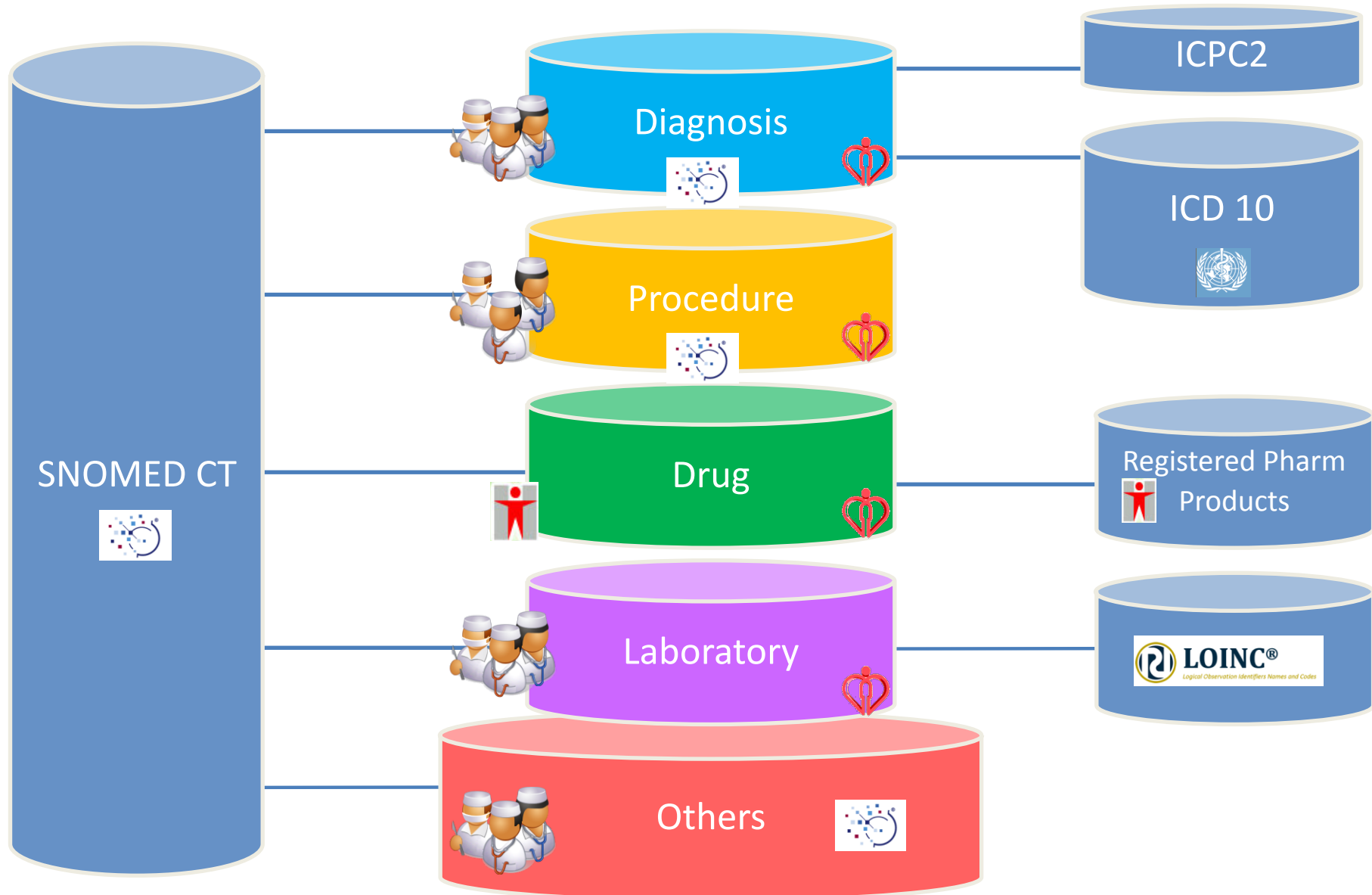
# Organisation Structure for eHR Information Standards



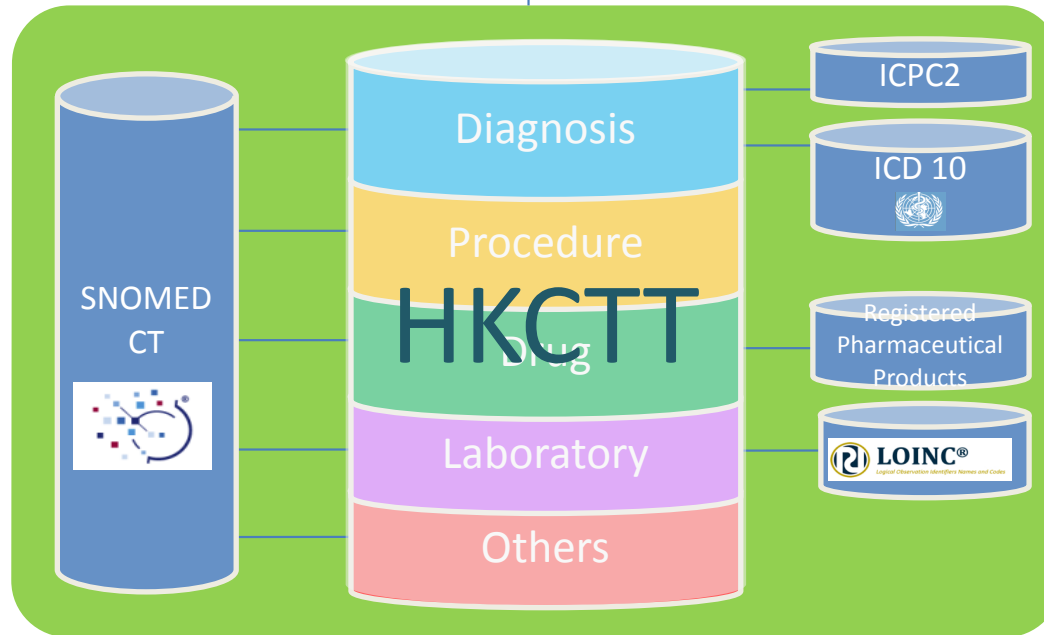
# Hospital Authority Clinical Vocabulary Table (HACVT)



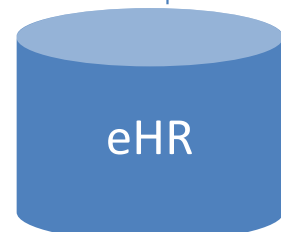
# Hong Kong Clinical Terminology Table (HKCTT)



# Hong Kong Clinical Terminology Table (HKCTT)

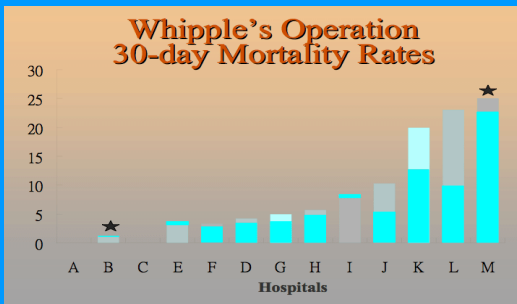


## eHR



## Secondary Use

Whipple's Operation 30-day Mortality Rates



# ROLES OF TERMINOLOGY IN EHR

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- Support clinical documentation
- Facilitate decision support
- Provide organised data in eHR Viewer
- Assist data retrieval / reporting

# Defining eHR Sharable Data using SNOMED

Name	Entity/Term ID
eHR Allergy Form	
eHR Allergy	1003131
Page 1	
Type of allergen code	1003138
Type of allergen description	1003139
Type of allergen local description	1003140
Allergen - recognised terminology name	1003133
Allergen identifier - recognised terminology	1003134
Allergen description - recognised terminology	1003135
Allergen local code	1003136
Allergen local description	1003137
Level of certainty code	1003369
Level of certainty description	1003370
Level of certainty local description	1003371
Allergic reaction code	1003372
Allergic reaction description	1003373
Allergic reaction local description	1003374
Delete allergen reason	1003145
Allergen remark	1003146
Allergy note	1003147



Allergic reaction code	1003372
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Entity



## HKCTT Concepts for Allergic Reaction

Term ID	Nature	eHR Description	ICD10	ICD10 Asso	SNOMED CT
33388	Diagnosis	Allergic contact dermatitis	L23.9		238575004
8394	Diagnosis	Allergic rhinitis	J30.4		61582004
30561	Diagnosis	Angioedema	T78.3	Y34	41291007
4545	Diagnosis	Aplastic anaemia	D61.9		306058006
8502	Diagnosis	Asthma	J45.9		195967001

# Aliases supporting clinical data capture

Hong Kong Clinical Terminology Table (HKCTT) Search Terminologies ▶

Term ID	9659	Nature	Diagnosis (Dx)
Description	Gastrointestinal bleeding		
Alias	GI - Gastrointestinal bleed		Source : SNOMED CT
	GI - Gastrointestinal haemorrhage		Source : SNOMED CT
	GI - Gastrointestinal hemorrhage		Source : SNOMED CT
	<b>GI bleed</b>		Source : SNOMED CT
	GI bleeding		Source : SNOMED CT
	GI bleeding, NOS		Source : SNOMED CT
	GI hemorrhage		Source : SNOMED CT
	GI hemorrhage, NOS		Source : SNOMED CT
	GIB		Source : HACVT
	GIH - Gastrointestinal haemorrhage		Source : SNOMED CT
	GIH - Gastrointestinal hemorrhage		Source : SNOMED CT
	GIT - Gastrointestinal tract haemorrhage		Source : SNOMED CT
	GIT - Gastrointestinal tract hemorrhage		Source : SNOMED CT
	Gastrointestinal bleed		
	Gastrointestinal bleeding, NOS		
	Gastrointestinal haemorrhage		
	Gastrointestinal hemorrhage		
	Gastrointestinal hemorrhage (disorder)		
	Gastrointestinal hemorrhage, NOS		
Status	Active		
Validation Rule	Principal	Yes	Sex N/A
Remarks			
ICD10 (2001)	K92.2	Asso. Code	
ICD10 (2010+MBD)	K92.2	Asso. Code	
ICPC2			
SNOMED CT	74474003		

Search panel

**Diagnosis**

Attending Reason  Chronic P

**Diagnosis**

- Per rectal bleeding
- Gastrointestinal bleeding**
- Melaena
- Haematemesis
- Duodenal ulcer, chronic, with haemorrhage
- Mallory-Weiss syndrome
- Oesophageal varices with haemorrhage
- Rectal haemorrhage

Displaying 1 - 9 of 26

# HKCTT for eHR Viewer

For  
Grouping in  
eHR Viewer



Date	Provider	Description	Code	System	Term ID	Group
3 Jan 2004	Hospital A	Chronic viral hepatitis B infection	<b>B18.1</b>	<b>ICD10</b>	<b>1008</b>	<b>Hepatitis</b>  <b>TermID 41635</b> <b>=</b> <b>SCTID 128241005</b>
9 Sep 2002	Dr Ho	Chronic type B viral hepatitis	61977001	<b>SNOMED CT</b>	1008	
4 Dec 2000	Hospital C	Alcoholic hepatitis	<b>K70.1</b>	<b>ICD10</b>	<b>29392</b>	
3 Mar 1999	Hospital B	Chronic viral hepatitis B infection	1008	<b>HKCTT</b>	1008	
4 Feb 1999	Dr Chan	Viral hepatitis	<b>D72</b>	<b>ICPC2</b>	1023	
1 Feb 1999	Dr Wong	Viral hepatitis	V hep	---	---	

Local Description



# eHR Viewer

黄荆瑞 WONG, ING SHEU

HKIC : UH9773127

DOB : 04-Jan-1887

Age : 126 years

Sex : M

Details ▶

Allergy &  
ADR

醫健通  
ehealth  
HEALTHCARE GOVT

All HA Non-HA

Legend



▼ Clinical Note & Summary

Clinical Note & Summary

Referral

Birth Record

Encounter

▼ Problem & Procedure

Problem / Diagnosis

Procedure

Investigation Report

▼ Medication

Prescribing History

Dispensing History

▼ Radiology Record

Fluoroscopy

Computed Tomography

PET / CT Fusion Imaging

Immunisation Record

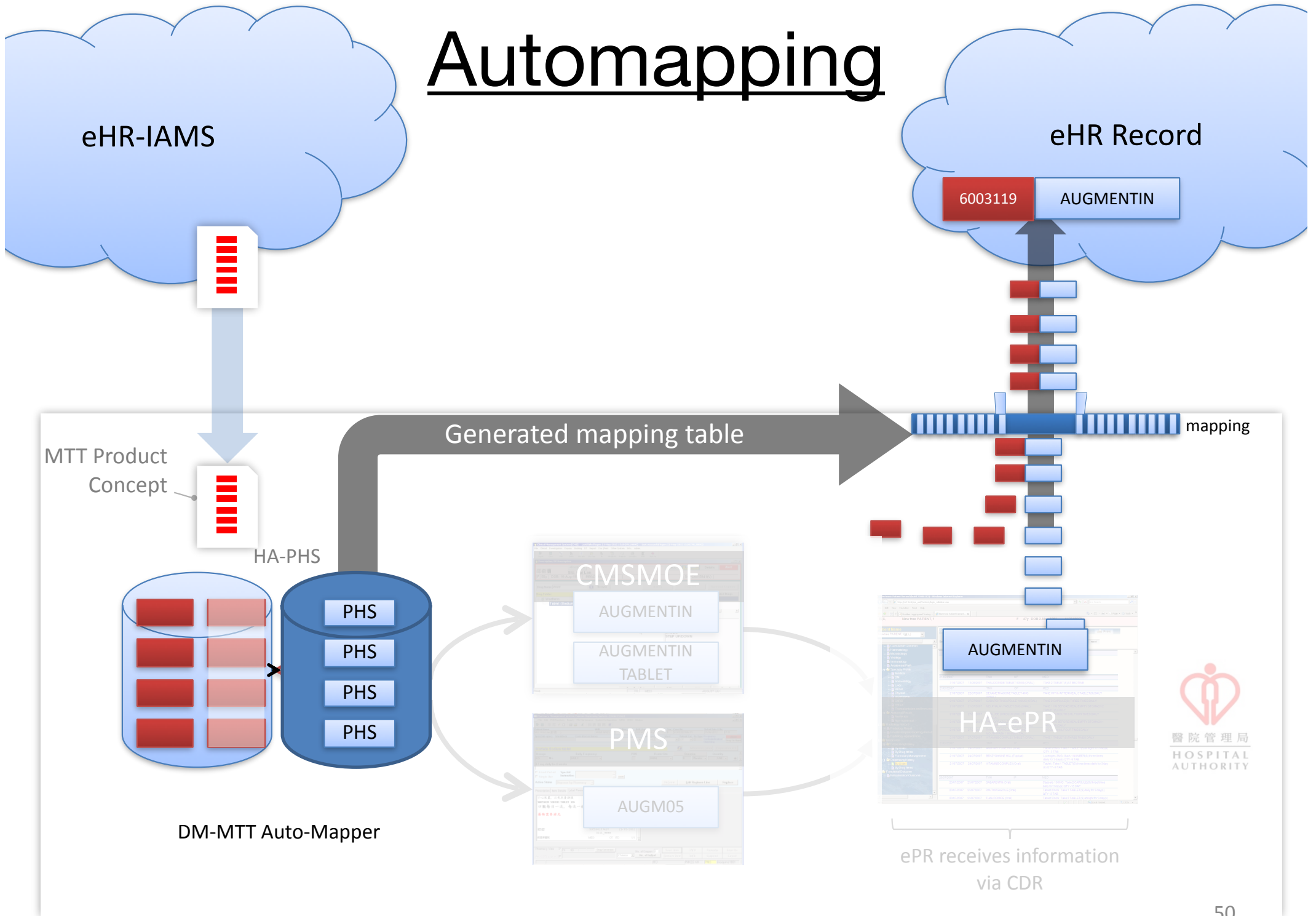
Problem

Date	Description	Institution
10-Feb-2012	Diabetes Mellitus	AHN
10-Feb-2012	Type II DM with background retinopathy	AHN
10-Feb-2012	Type II DM with over nephropathy	AHN
04-Jan-2004	<b>Hepatitis</b>	Hospital A
04-Jan-2004	Portal hypertension	Hospital A
04-Jan-2003	Acute upper respiratory infection	Hospital A
01-Feb-1999	Viral hepatitis	Dr Wong

Hepatitis

04-Jan-2004	Chronic viral hepatitis B infection	Hospital A
04-Jan-2004	Portal hypertension	Hospital A
09-Sep-2002	Chronic type B viral hepatitis	Dr Ho
09-Sep-2002	Ascites	Dr Ho
04-Dec-2000	Alcoholic hepatitis	Hospital C
03-Mar-1999	Chronic viral hepatitis B infection	Hospital B
03-Mar-1999	Portal hypertension	Hospital B
04-Feb-1999	Viral hepatitis	Dr Chan

# Automapping



# FINAL REMARKS

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- Standardization and terminology are essential for modern healthcare
- SNOMED is useful in a single provider EMR environment, but is indispensable in a multi-provider EHR environment
- This is difficult and we are all learning - global sharing is required

# Key Message

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**A standardised eHealth system can achieve better, safer, more efficient care delivery on an industrial scale at a reasonable cost**

# Bold Claim

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- A standardised eHealth system can achieve better, safer, more efficient care delivery on an industrial scale at a reasonable cost
- In fact it may be the only thing that can do so