Systematic Training Programme and Certification for Healthcare and IT Practitioners

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eHEALTH

Dr CP Wong
President
eHealth Consortium

What is Health Informatics?

- Simplistic definition:
  - Computer applications in medical care
- Complicated definition:
  - the study, invention, & implementation of structures & algorithms to improve communication, understanding & management of medical information

What is Health Informatics?

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- End objective
  - Coalescing of data, knowledge & the tools necessary to apply that data & knowledge in decision-making processes
- Focus on the structures & algorithms necessary to manipulate the information
- Separates from other medical disciplines where information content is the focus.

Scope

- information retrieval
- integrated workstations
- telecommunication
- networking
- medical records
- health records
- medical imaging, bio-signal analysis
- speech input
- mobile computing
- knowledge acquisition
- digital libraries
- medical terminology and vocabularies, coding
- standards
- privacy, security
- decision-support systems
- technology assessment
- health-services research
- internet
- nursing informatics
- consumer informatics
- public health informatics

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WHAT IS EHEALTH?

- The combined use of electronic communication and information technology in the health sector
- The use of digital data, transmitted, stored and retrieved electronically, for clinical, educational and administrative purposes, both at the local site and at a distance

- WHO 2003

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Functions of eHealth

- Support administrative/clerical processes: faster completion of tasks, fewer transcription errors, reduced numbers of personnel, increase accessibility, efficiency & productivity
- Produce good quality information, both clinical & operational
- Error checking, drug interactions, allergies & dosages
- Improve communication between health care professionals & patients, including records, appointments & education.
- Opportunities for new ways of managing patient populations & their medical problems, e.g. care plan, critical pathways, quality assurance, *etc.*

Disadvantages of manual systems

- NOT TIMELY: Information is only available in batches, e.g. every five years, and publication of the results can be considerably delayed
- UNRELIABLE: Relies on the cooperation of health care workers to manually complete detailed questionnaire
- INEFFICIENT: Waste of a lot of resources and time
- DUPLICATION: Double entries at multiple sites
- SINGLE USER: One copy to be used by one user only
- INCOMPLETE: Data may be incomplete because of human errors
- INAPPROPRIATE: Difficulty in identifying the target groups
- INACCURATE: Unreliable data from memory or records

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EXAMPLES OF EHEALTH SYSTEMS IN HK

- Hospital Authority CMS (Clinical Management System)
- HA PPI-ePR Sharing (Public Private Interface electronic Patient Record Sharing)
- Department of Health CDIS (Communicable Disease Information System)
- Private Hospitals IT Systems
- Private Clinic Groups IT Systems
- Private Clinic Automation Systems
- Future Territory-wide Patient-centered E H R System

Computerized Patient Records

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- The key to all health information system
- To document the care activities applied to each individual patient
- To coordinate clinical work flow among the professionals and their resources
- To provide comparable data about costs, charges, effectiveness, and anticipated demand with respect to various patient cohorts

The Computer-Based Patient Record 电子化病历

- "An electronic patient record that resides in a system specifically designed to support users by providing accessibility to complete and accurate data, alerts, reminders clinical decision support systems, links to medical knowledge and other aides" 电子病历在临床管理系统中提供使用者全面、準确的资讯、警示、提示、临床决策支援、结合医疗智识及其他工具

- The Computer-Based Patient Record - An Essential Technology for Health Care (1991, 97) 电子病历是一项医疗服务的基本科学

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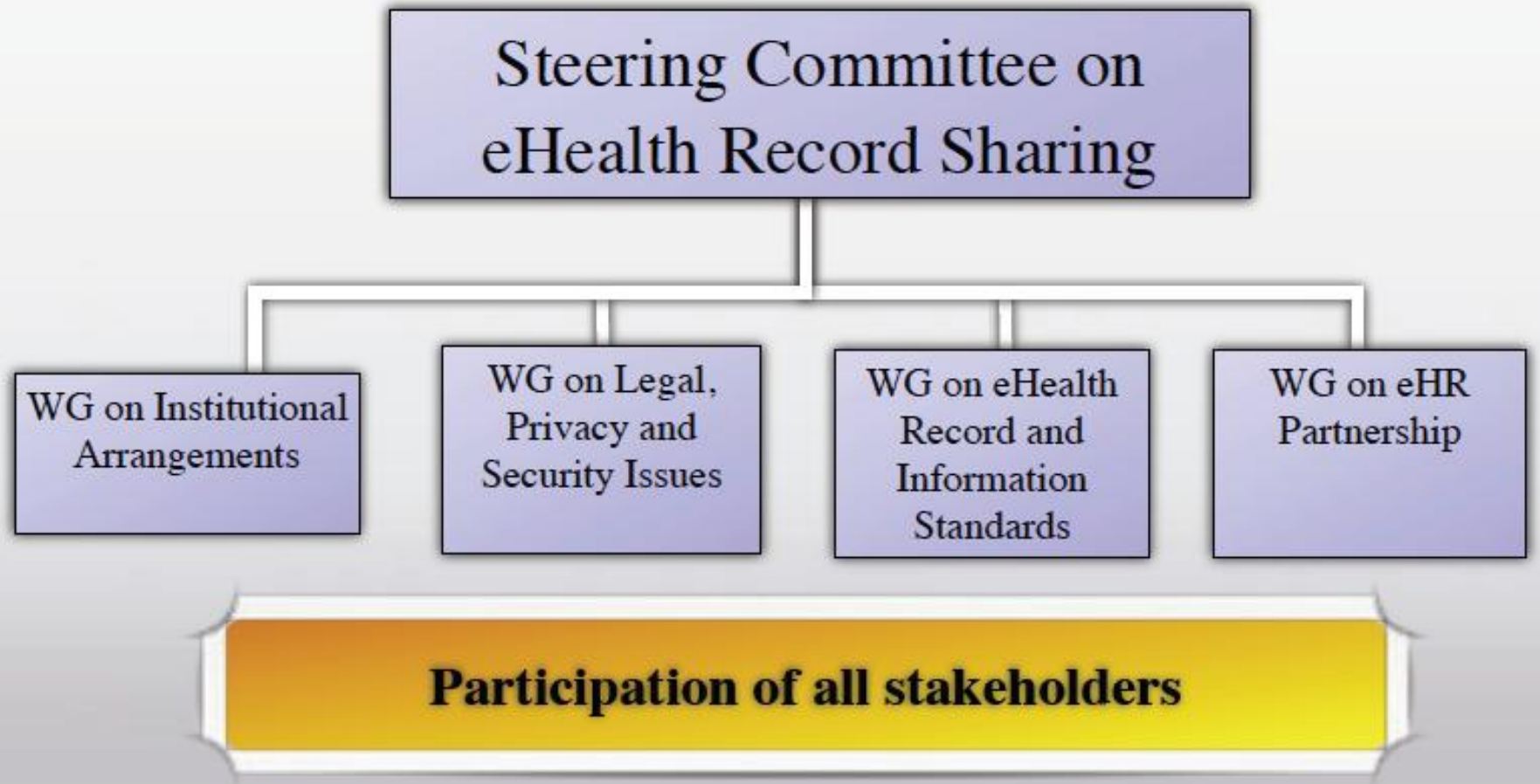
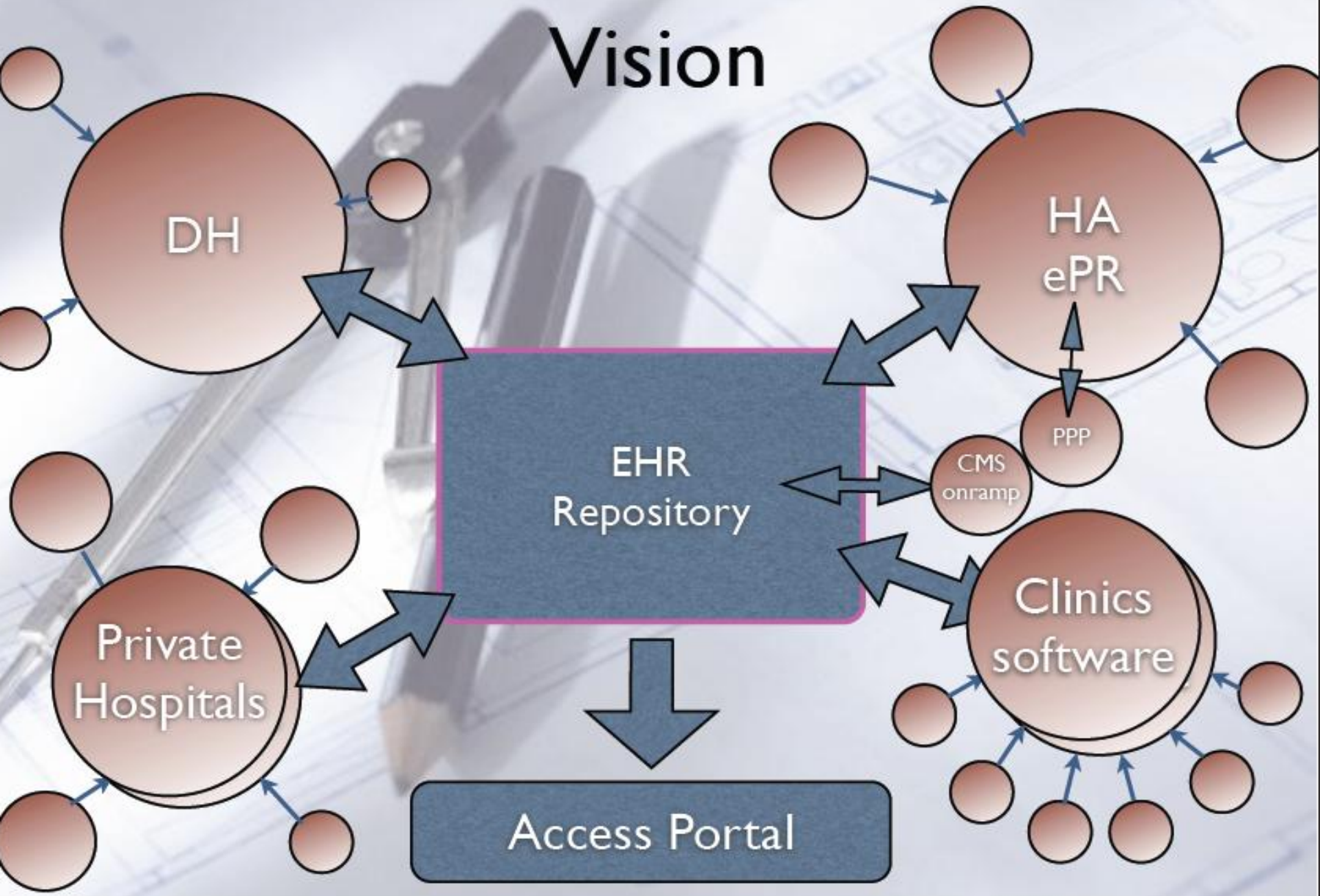
eHEALTH ADOPTION AND PLAN IN HK

- Government set up E H R office in 2010
- Injected $702 million for next 5 years
- Set up steering committee to govern development
- Aims for a territory wide patient centered electronic health record sharing platform



Department of Health; Hong Kong Academy of Medicine; Hong Kong College of Family Physicians; Hong Kong College of Radiologist; Hong Kong College of Pathologist; Hong Kong Hospital Authority; Hong Kong Medical Association; Hong Kong Doctors Union; Hong Kong Private Hospitals Association; Other healthcare partitioners and allied health professionals; Health informatics and healthcare IT professionals; Consumer Council; Office of the Government Chief Information Officer; Office of the Privacy Commissioner for Personal Data

Vision


DH
HA
ePR
PPP
EHR
Repository
CMS
onramp
Private
Hospitals
Clinics
software
Access Portal

eHR Time Line

09/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19
Sharing Coverage	0.1M	0.2M	0.3M	0.5M	1M	2.5M	4.5M	5.5M	6M

- HA CMS adaptation (Basic) — CMS adaptation (Advanced)
- DH ePR and computerizations
- PH systems upgrade
- Interface pilots
- eHR infrastructure — Phase 1 eHR (Dr portal) — Phase 2 eHR (Patient portal)
- CMS on ramp
- eHR Certification Scheme
- PPI-ePR and pilots
- Standardization - ongoing

Guiding principles of eHR development

1. Government-led model
2. Compelling But Not Compulsory Record Sharing
3. Privacy and Security of Paramount Importance
4. Open Technical Standards
5. Building Block Approach

EMR Benefits

(a) Increase revenues

- Improve charge capture
- Improve cash flow
- Enhance revenue

(b) Averted costs

- Reduce supply / printing
- Improve utilization of tests
- Reduce transcription
- Improve productivity
- Better availability of info
- Less pulling charts

(c) Intangible benefits

- Improve quality
- Improve patient safety
- Improve patient education
- Improve coordination of care
- Improve legal and regulation compliance
- Improve research
- Improve business relationship

-- Menachemi, 2005

Why eHR?

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Patient-oriented healthcare records

Family doctor concept; integrated primary and hospital care

Public-private interface and partnership

eHR
Essential Infrastructure for Healthcare Reform

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BENEFITS OF EHR SHARING SYSTEM

- **Patient Benefits**
  - Maintain comprehensive online record for health providers
  - Provide timely and accurate information for care
  - Reduce duplication of tests and treatment
- **Clinician Benefits**
  - Enable efficient and quality assured clinical practice
  - Reduce errors associated with paper records
- **Society Benefits**
  - Improve disease surveillance and monitoring of public health
  - Help gather more comprehensive statistics for formulating public health policy
  - Bring efficiency gain in total health expenditure

Issues in eHealth

- Human-machine interface: acceptance
- Standards: for exchanging clinical data (Health Level Seven [HL-7], 1994), images (ACR/NEMA, DICOM), clinical observations (ASTM Committee E-31), bedside instrument data (IEEE, 1995), prescription data (NCPDP, 1992), and administrative data associated with claims (Accredited Standards Committee X12N).

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Issues in eHealth

- Coding sets: ICD9-CM, ICD10, SNOMED III, CPT, NANDA, Read Classification, LOINC, and MEDRA
- Security – Privacy – Confidentiality
- Infrastructure
- Cost-benefit analysis
- Education and Training

Health Data Standards

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The key for interoperability

STANDARDS

- For exchanging clinical data (Health Level Seven [HL-7], 1994)
- Images (ACR/NEMA, DICOM)
- Clinical observations (ASTM Committee E-31)
- Bedside instrument data (IEEE, 1995)
- Prescription data (NCPDP, 1992), MedDRA
- Administrative data associated with claims (Accredited Standards Committee X12N)
- Coding sets: ICD9-CM, ICD10, SNOMED III, CPT, NANDA, Read Classification, LOINC

Prevalent standards used

		Hosp A	HA
Patient identification	*HKID card number / HK Birth Certificate number*	*Y*	*Y*
	*Self-developed ****		*Y*
Diagnosis	*ICD 9 CM*	*Y*	*Y*
	ICD 10	*Y*	*Y*
	ICPC v.1	*Y*	
	ICPC v.2		*Y*
	International Classification of Functioning, Disability and Health (ICF)		*Y*
Procedures	*ICD9 CM*	*Y*	*Y*
Laboratory data	*SNOMED CT*		*Y*
	SNOMED III		*Y*
	LOINC		*Y*
	*Self-developed ****	*Y*	*Y*
Drug data	*British National Formulary (BNF)*	*Y*	*Y*
	USPDI, Martindale	*Y*	
Imaging	*DICOM*	*Y*	*Y*

Data Privacy

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The most important ELSI (Ethical, Legal, Social Issues) in health informatics

Medical Records

- Most personal information about an individual
- Sensitive: pregnant? HIV? STD? cancer? Family tree? Family history? Psychiatric symptoms? Affecting working capacity? Affecting reproduction? Life style?
- Previously single doctor, single user – now multiple players
- Previously one copy – now accessible by thousands of sites

Protection of Privacy

- Strict Role based access control
- Authentication of Provider and Patient
- Authentication of facilities
- Audit Trail Logging
- Checking of Audit Trail Log
- Privacy Ordinance

Data Protection Principles DPP1-6

- **Principle 1** – Purpose and manner of COLLECTION
  - lawful and fair collection; information give to a data subject when collecting personal data from that subject
- **Principle 2** – Accuracy and duration of RETENTION
  - accurate, up-to-date and kept no longer than necessary
- **Principle 3** – USE of personal data
  - for the purposes for which they were collected or a directly related purpose.
- **Principle 4** – SECURITY of personal data
  - appropriate security measures
- **Principle 5** – INFORMATION to be generally available
  - Openness about the kinds of personal data they hold and the main purposes for which personal data are used.
- **Principle 6** – ACCESS to personal data
  - data subjects have rights of access to and correction of their personal data

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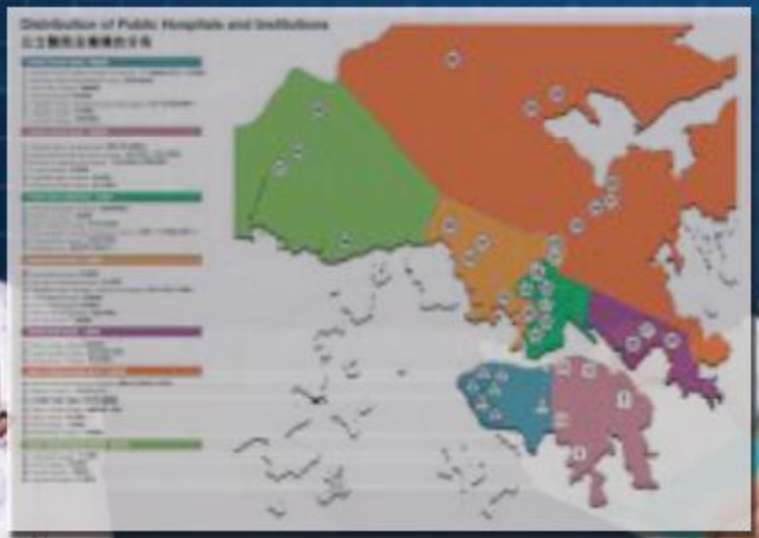
Local Perspectives

The Hospital Authority

- **40** Hospitals
- **45** Specialist Clinics
- **74** General Clinics
- **52,000** staff
- **9M** patient records
- **1M** annual admissions
- **13M** ambulatory visits



Development in the HA
A long journey

1990 "Green fields"

1991 Patient Administration

1992 Pharmacy system

1993 Lab results online

1994 Radiology Information System

1995 Clinical Management System

- Direct clinician documentation and order entry

2000 CMS Phase II

- Electronic Patient Record (ePR)

2003 eSARS

2004 ePR Image Distribution

2006 PPI ePR sharing

2008 CMS Phase III

Developed inhouse

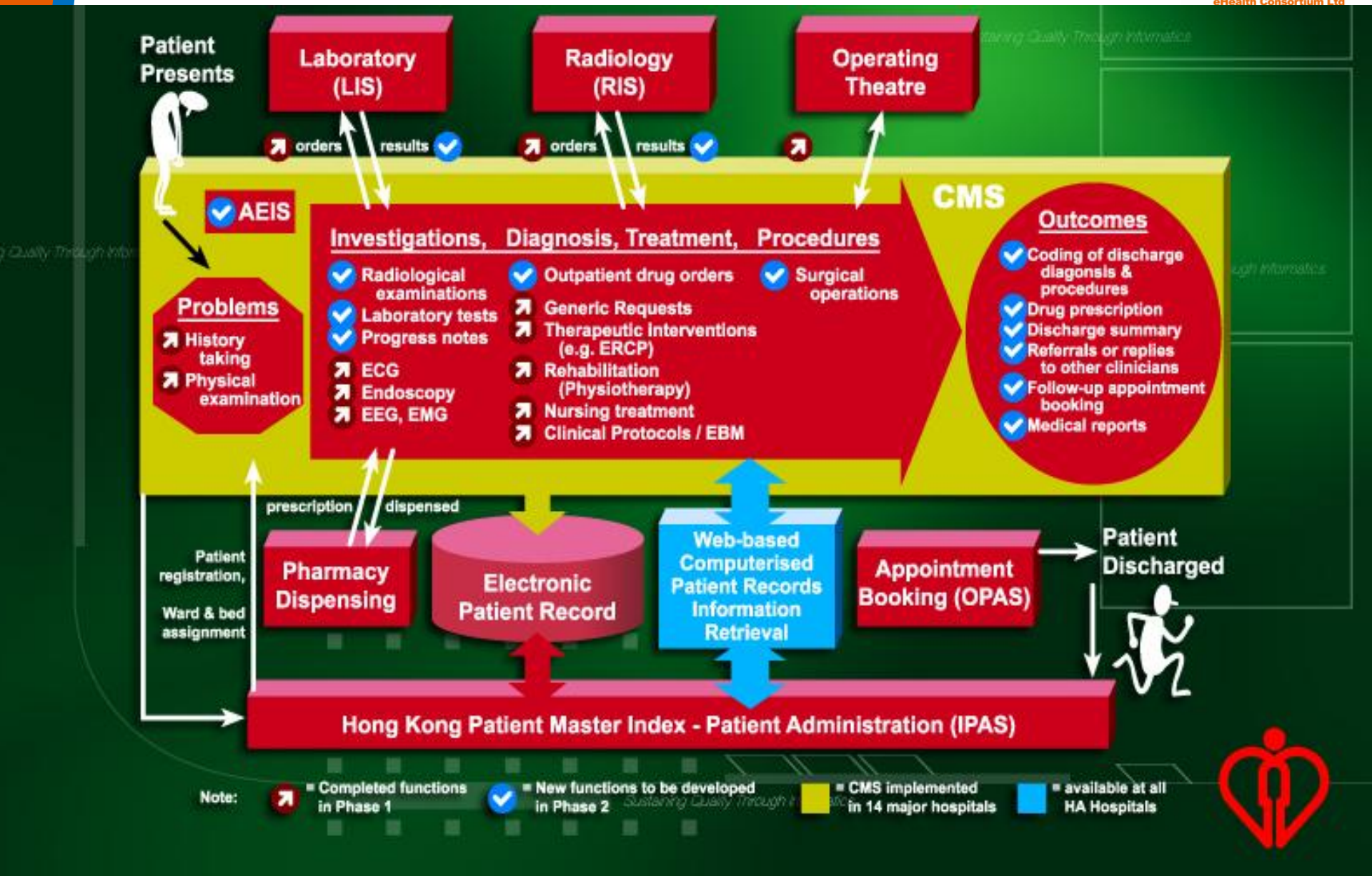
Hospital Authority Wide Area Network Connection

Clinical Management System

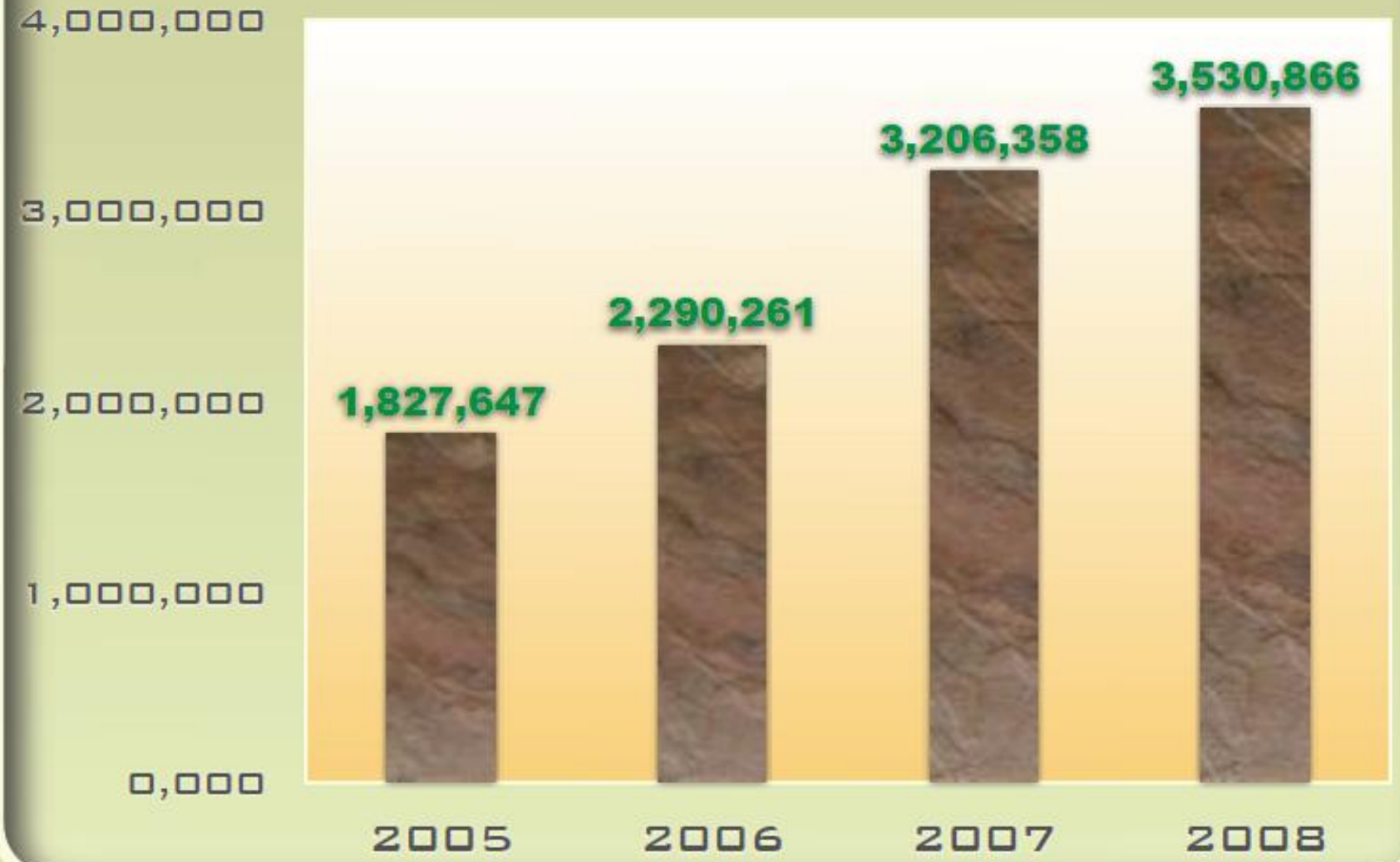
12,000 Workstations
29,000 Clinical Users
162 HA Locations

Single Sign on
24 x 7 x 365 service

On a Single Platform



CMS - Daily Transactions



电子病历内容
ePR Contents

- 病人个人资料 Patient demographics
- 入院及门诊纪录 Admissions & Outpatients
- 药物敏感及警示 Allergies & Alerts
- 化验报告 Lab Results
- 放射报告 Rad Results
- 药物处方 Prescriptions
- 诊断 Diagnosis
- 手术、医疗操作 Procedures
- 住院摘要 Discharge Summaries
- 复康治疗 Rehabilitation Summaries
- 产科纪录 Obstetric History
- 其它专科資料 Other Specialty Data
- 放射影像 Radiological Images

ePR - Scale

- **8.9M** patients
- **223M** episodes of care
- **890M** laboratory results
- **70M** radiology studies
- **388M** drug items
- **3.5M** updates / day
- **700K** hits / day
- **Sub-second** response time
- 7x24 >**99.98%** uptime since live run

登入临床管理系统

Hospital Authority

病房 WARD

門診 CLINIC

常用連結 USEFUL LINK

- HA News Update NEW!
- HA Intranet
- HA LIS eKG
- Pharmacy Info.

- User Guide

Hospital Authority
Clinical Management System
Version 2.0.0085.006

Logon: EP000

Password: ******

OK

Exit

Important Notes

1. All patient information is strictly confidential
2. Staff may only use the CMS for authorised purposes
3. All access to CMS is logged
4. Please logoff immediately after use
5. Please ensure you have verified the content before you sign the computer printouts

AHN

醫囑—藥物

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Drug History

Previous Prescription

Date	Case No.	Ref.No.	Ordered by	Status	Type
02/06/2004	TKG10274071(Z)	0881	TKG1 - TJR6	Vetted	Out-Patient
19/04/2004	SOPD0000771(S)	7597	MED - GEN	Vetted	Out-Patient
09/01/2004	SOPD0000771(S)	6350	MED - RESA	Vetted	Out-Patient
19/12/2003	SOPD0000771(S)	7440	MED - RESA	Vetted	Out-Patient
07/11/2003	SOPD0000771(S)	7487	MED - RESA	Vetted	Out-Patient

Prescription Duration

Start Date 22/06/2005 for 8 Weeks

End Date 16/08/2005

All Future Appt.

Hospital Code VH

Prescription Details

BONJELA oral gel 15g oral : bd prn	for 8	Weeks
LASIX (FRUSEMIDE) tablet oral : 20 mg daily	for 8	Weeks
SENOKOT (SENNA) tablet oral : 15 mg nocte prn	for 8	Weeks
THYMOL GARGLE COMPOUND mouthwash 1 in 4 buccal : bd	for 8	Weeks
VENTOLIN (SALBUTAMOL SULPHATE) inhaler 100mcg/dose 200dose(s) inhalation : 2 puff(s) qid prn , dispense 2 vial	for 8	Weeks
ATROVENT (IPRATROPIUM BROMIDE) inhaler 20mcg/dose 200dose(s) inhalation : 2 puff(s) qid , dispense 2 no start from TKOH med	for 8	Weeks
MV (MULTIVITAMIN) tablet oral : 1 tablet(s) daily	for 8	Weeks

Select All

Add

Deselect All

ePR

CDDH

Show Dispense

Full History

Cancel

化验

Add Ix

By User | Discipline: All | Ix | Search

MED - COMMON | Tx | ICU | HD | PD | ICU COMMON | SEPSIS | APO | LIVER TRANSPLA

---Chemical Path---
- Blood Gases
- Renal Function, plasma
- Liver Function, plasma
- Bone Profile, plasma
- Urate, plasma
- Amylase, plasma
- Glucose fasting, plasma
- Glucose randomized, plasma
- Cardiac Enzymes, plasma
- CK isoenzyme MB, serum
- Haemoglobin A1c , blood
- Lipids(CHOL, TG)
- High Density Lipoprotein Chole
- LDL Cholesterol, plasma
- Iron Profile
- Sodium, spot urine
- Potassium, spot urine
- Protein total, 24 hour urine
- Creatinine, 24 hour urine
- Creatinine Clearance, urine
- Occult Blood, stool

---Haematology---
- CBC only
- Differential WBC
- Film Comment
- Reticulocyte Count
- ESR
- APTT
- PT/INR & APTT

---Microbiology---
- Blood,Routine culture
- Sputum,Microscopy + culture
- Sputum,AFB smear & TB cultu
- MSU,Microscopy + culture
- EMU,AFB smear & TB culture
- Stool,Microscopy + culture
- Stool,Examination for parasite
- Throat Swab,Microscopy + cu

- Protein total, cerebral spinal
- Glucose, cerebral spinal fluid
- CSF,AFB smear & TB culture
- CSF,Microscopy + culture

New Ix | Urgent

LAB
- RFT/LFT, plasma
- Creatine Kinases, pla
- CBC only

XRAY | R
- Chest

Select All | Modify User Folder | Add Ix | Edit | Delete

Input Methods: By Dx | By User | By Discipline

Save | Cancel

电子病历纪录概览 ePR

HA - Tree View Prototype (build 041008) - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address http://epr.home/epr/Content/login_validator.asp

HKID K1233456 Name: Patient DOB:02/03/1956 (Exact? Y) Age: 48y Sex:F details next patient Logout

Summary Schedule

Patient

- Diagnosis
- Procedure
- Clinical Note
  - All
  - Discharge Note
  - OP Note
  - AE Note
- Radiology Record
  - Radiology Result
  - Radiology Appointment
- Medication
  - Dispensed - By Episode
  - Dispensed - Summary
- Procedure Record
  - ERS
  - OTRS
- Laboratory Result
  - Blood Group Result
  - Cumulative Common
  - Specialty Profile
    - Medical
    - DM
    - Immunology
    - Liver
    - Renal
    - Thyroid
    - Anaesthetic
    - SARS
  - Common Profile
  - Biochemistry Result
  - Haematology Result

Diagnosis

Last Entry	Description
03/12/2004 (x14)	End Stage Renal Failure
31/12/2003 (x4)	Chronic renal failure
13/08/2003	Vomiting alone
21/07/2003	Peritonitis related to continuous ambulatory peritoneal dialysis
23/06/2003	Kidney dialysis as the cause of abnormal reaction of patient, or of later complication
14/03/2002	Hypotension
31/10/2001	Other specified surgical operations and procedures causing abnormal patient reaction, or later complication
31/10/2001	Wound bleeding, postoperative

Procedure

Last Entry	Description
03/12/2004 (x12)	Haemodialysis
16/12/2003 (x2)	Tenckhoff catheter removal
14/11/2003	Creation of arteriovenous fistula
16/09/2003 (x2)	Insertion of Tenckhoff catheter
13/07/2003	Bone marrow examination
13/07/2003	Echocardiography
13/07/2003	Ultrasonogram of abdomen
13/07/2003	Whole body scan, gallium
13/07/2003	CT abdomen with contrast
13/07/2003	Removal of haemodialysis catheter
13/07/2003	Insertion of haemodialysis catheter

Drug Allergy

Description
Nil

Current Medication

Legend

Last Dispensed	Drug name (Route)
11/10/2004	AMITRIPTYLINE HCL (Oral)
11/10/2004 (x 2)	ERYTHROPOIETIN BETA (Injection)
11/10/2004 (x 2)	SUSTANON 250 (Injection)
11/10/2004	SODIUM BICARBONATE (Oral)
11/10/2004	FAMOTIDINE (Oral)
11/10/2004	ALUMINIUM HYDROXIDE (Oral)

Recent Schedule

Legend HKPMI View

Date		Hospital / Clinic	Service Type	Description
24/01/2005	08:45	YMT/YMTSCE	SOPD	Medicine / Ne
✓ 06/12/2004	13:30	QEH	IP	Medicine / Int

以标准为基础
Standard-based

- 采用国际性通用的信息科技标准 International Standards
  - HL7, ICD, LOINC, SNOMED, DICOM
- 建立本地标准 Locally Developed
  - 临床信息框架 CDF
  - 医院管理局医疗信息架构 Entity ID

Laboratory results

Electronic Patient Record (ePR)

Patient Information

Details | +Alert

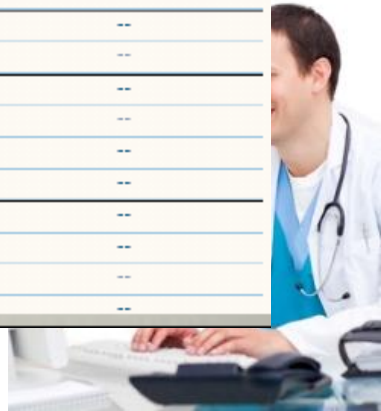
Case: [redacted] HKID: [redacted] Name: PATIENT, 000226 Sex: M Age: 72y

Summary | Event

- PATIENT, 000226
  - Consultation Note
  - Diagnosis
  - Procedure
  - Radiology Result
  - Medication
    - Dispensed - By Episode
    - Dispensed - Summary
  - Laboratory Result
    - Cumulative Common
    - Cumulative Specific
      - Medical
      - DM
      - Immunology
      - Liver
      - Renal
      - Thyroid
    - Common Profiles
    - Biochemistry Result
    - Haematology Result
    - Immunology Result
    - Microbiology Result
    - Anatomical Path Result
  - Abnormal Result
    - Numerical Result
    - Non-numerical Resul

Search by Request Date

	15/12/2002	15/12/2002	14/12/2002	13/11/2002	12/11/2002
	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated
	TMH	NDH	PWH	AHN	PYN
	--	9.1 ↓	--	11.4 ↓	12.8
	--	3.82	--	4.15	4.34
	--	0.275 ↓	--	0.343	0.375
MCH	--	23.9 ↓	--	27.4	29.5	--	32.0
MCHC	--	33.1	--	33.1	34.1	--	35.3
Platelet	--	518 ↑	--	368 ↑	514 ↑	--	192
WBC	--	7.5	--	10.7 ↑	7.1	--	5.0
APTT	29.5	--	--	--	--	--	--
Prothrombin Time	11.9	--	--	--	--	--	--
Sodium	--	--	137	--	--	--	--
Potassium	--	--	4.0	--	--	--	--
Urea	--	--	5.2	--	--	--	--
Creatinine	--	--	94	--	--	--	--
Protein, Total	--	--	71	--	--	--	--
Albumin	--	--	41	--	--	--	--
Bilirubin, Total	--	--	2	--	--	--	--
Alkaline Phosphatase, Total	--	--	90	--	--	--	--



放射影像报告 Radiological Report

HKID: K1001000 Name: PATIENT, 305997(病人) DOB: 01/12/1965 (Exact? Y) Age: 39 Sex: F Death: N

Patient Name
PATIENT, 305997(病人)

Summary | Schedule | Latest 5 results

print

- PATIENT, 305997
  - Diagnosis
  - Procedure
  - Clinical Note
    - All
    - Discharge Note
    - AE Note
  - Radiology Record
    - Radiology Result
    - Radiology Appointment
  - SARS Report
    - SARS Mini Data Set
    - Post SARS Clinic
    - SARS Specific Lab. Result
  - Procedure Record
    - ERS
    - OTRS
  - Functional Outcome
    - Rehabilitation Outcome Rep
  - Laboratory Result
    - Blood Group Result
    - Cumulative Common
    - Specialty Profile
      - Medical
      - DM
      - Immunology
      - Liver
      - Renal

Search by Request Date | legend

Request Date Period | Request Date Range

Period: -- All -- OR From Date: To Date: go reset

HN050000002	10/01/2005	14:02	XRAY	Clavicle	AHN
HN050000001	10/01/2005	12:39	XRAY	AC joint	AHN
No case no	07/01/2005	14:55	CT	Shoulder plain	AHN
No case no	07/01/2005	14:55	CT	Shoulder +con.	AHN
No case no	07/01/2005	14:53	XRAY	AC joint	PWH
No case no	07/01/2005	14:52	XRAY	Chest	NDH
No case no	07/01/2005	14:52	XRAY	Chest + Ba	NDH

Report | copy | find

Last Updated Date: 10/01/2005 17:19 Last Endorsed Date: 10/01/2005 17:19

Content:

URGENT PLAIN CT BRAIN.

Clinical History:
Head injury with LOC and vomiting. (history from ePR: patient has history of NPC and Ca lung).

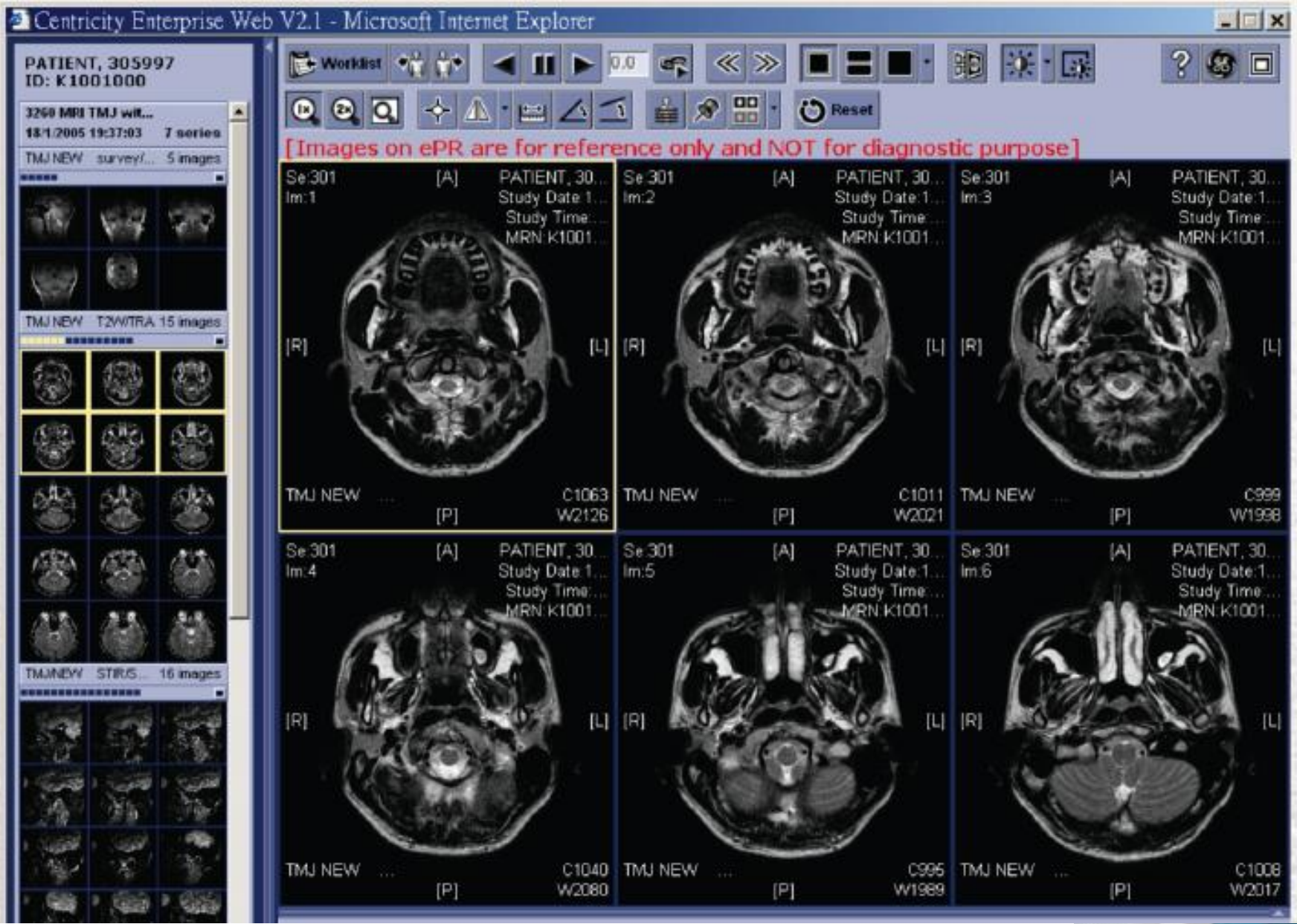
Technique:
- 5mm non-contrast axial CT scans of the posterior cranial fossa.
- 10mm non-contrast axial CT scans of the rest of the brain.

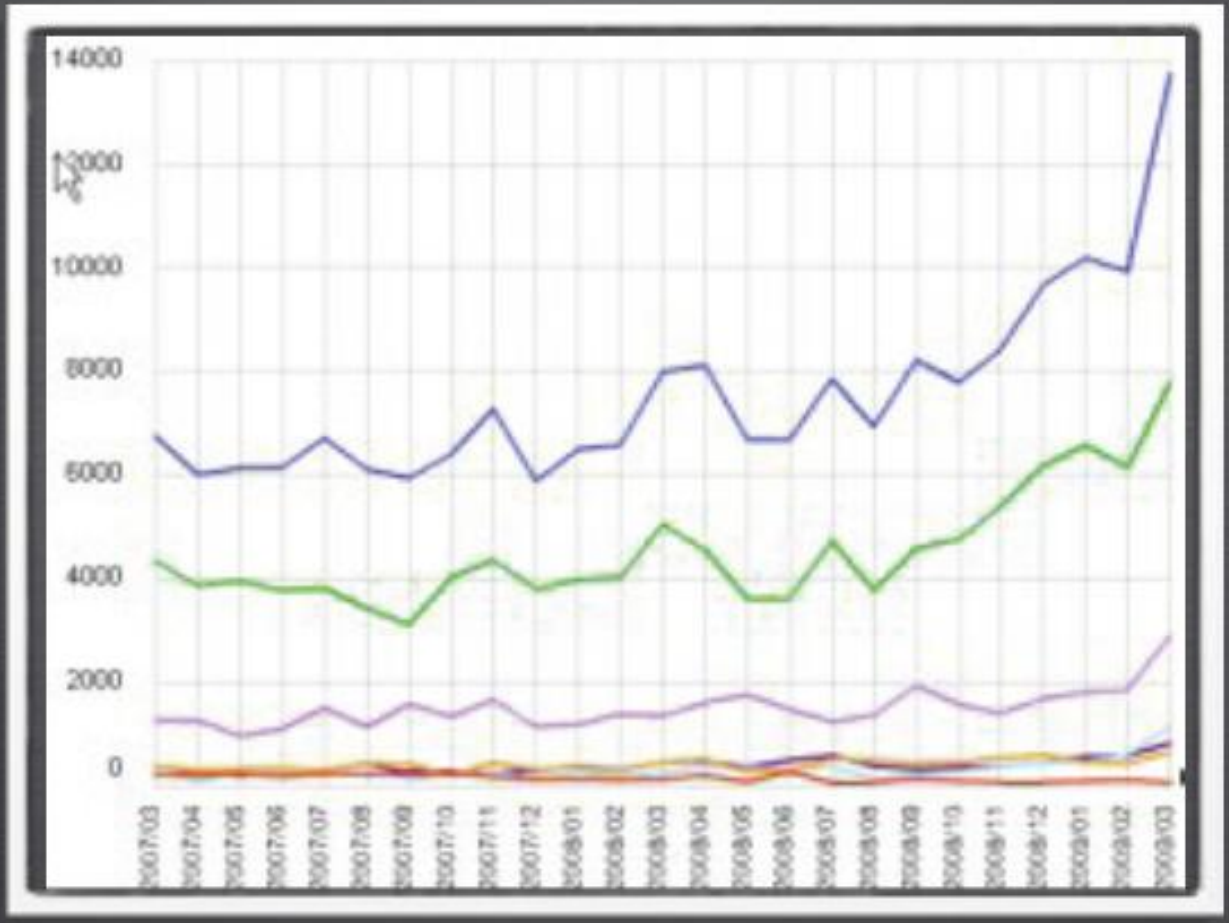
Findings:

There is a hyperdense subdural haematoma in the left frontoparietotemporal region. It measures 9mm in thickness.
There is mild mass effect with ipsilateral sulcal, ventricular effacement and mild midline

1st Endorsed By:	RIS User for DEMO	2nd Endorsed By:	
1st Endorsed Date:	10/01/2005 17:19	2nd Endorsed Date:	

放射影像


Centricity Enterprise Web V2.1 - Microsoft Internet Explorer
PATIENT, 305997
ID: K1001000
3260 MRI TMJ wit...
18/1/2005 19:37:03 7 series
TMJ NEW survey/... 5 images
TMJ NEW T2WTRA 15 images
TMJ NEW STIR/S... 16 images
Worklist
Reset
[Images on ePR are for reference only and NOT for diagnostic purpose]
Se:301 Im:1 [A] PATIENT, 30... Study Date:1... Study Time:... MRN:K1001... [R] [L] TMJ NEW ... C1063 [P] W2126
Se:301 Im:2 [A] PATIENT, 30... Study Date:1... Study Time:... MRN:K1001... [R] [L] TMJ NEW ... C1011 [P] W2021
Se:301 Im:3 [A] PATIENT, 30... Study Date:1... Study Time:... MRN:K1001... [R] [L] TMJ NEW ... C999 [P] W1998
Se:301 Im:4 [A] PATIENT, 30... Study Date:1... Study Time:... MRN:K1001... [R] [L] TMJ NEW ... C1040 [P] W2080
Se:301 Im:5 [A] PATIENT, 30... Study Date:1... Study Time:... MRN:K1001... [R] [L] TMJ NEW ... C995 [P] W1989
Se:301 Im:6 [A] PATIENT, 30... Study Date:1... Study Time:... MRN:K1001... [R] [L] TMJ NEW ... C1008 [P] W2017



Clinical Data Analysis and Reporting (CDARS)

14000 queries per month

MDS Statistics (2008)

Drug Allergy Checking

Drug Allergy Alerts Raised	68,790
Alert Accepted	32,102 (47%)
Alert Overridden	36,688 (53%)

Drug Drug Interaction Checking

DDI Alerts Raised	10,975
Alert Accepted	3881 (35%)
Alert Overridden	7094 (65%)

Infectious Disease Reporting

Clinical Management System [CMS] Last successful logon: 27-Apr-2009 21:21 (QMHHAHO)

File Clinical Investigation Enquiry Booking DT Report Doc/Print Other System Info. Admin.

Logoff Close PSP Dx/Rx Disc Info Disc Sum Rx Reminder Letter/Doc Lab Result OP Book Bed Assign ePR Next Pat

MDORS

Unknown Details Alert

病人 PATIENT, 589667

M	25y	DOB: 03-Sep-1983	Z343653(6)	PAE	L1	Adm: 26-Feb-1998	HN98950017(7)

Report Date	Edit	Print	Disease	Reported by	Last Updated	Pat.Spec	Hosp	
02/10/2008 11:27			Cryptosporidiosis	WONG, TAI MAN	02/10/2008 11:27	PAE	QMH	Log
02/10/2008 11:26			Chickenpox	WONG, TAI MAN	02/10/2008 11:26	PAE	QMH	Log
02/10/2008 11:26			Tuberculosis	WONG, TAI MAN	02/10/2008 11:26	PAE	QMH	Log

Scheduled Infectious Diseases | Infectious Diseases of Public Health Concerns | Potential Outbreak

Acute poliomyelitis	CA-MRSA Infection	Hantavirus infection	Measles	Relapsing fever	Typhoid fever
Amoebic dysentery	Creutzfeldt-Jakob disease	*Influenza A(H2) / Influenza A(H5) / Influenza A(H7) / Influenza A(H9) / Swine Influenza*	*Meningococcal infection (invasive)*	Rubella / Congenital rubella syndrome	Typhus / Other rickettsial diseases
Anthrax	Dengue fever	Japanese encephalitis	Mumps	Scarlet fever	Viral haemorrhagic fever
Bacillary dysentery	Diphtheria	Legionnaires' disease	Paratyphoid fever	*SARS*	Viral hepatitis
Botulism	E. coli O157:H7 infection.	Leprosy	*Plague*	*Smallpox*	West Nile Virus Infection
Chickenpox	*Enterovirus 71*	Leptospirosis	Psittacosis	*Streptococcus suis infection*	Whooping cough

疾病呈報系統 (NDORS)

電子健康聯盟
eHealth Consortium Ltd

http://chrischoi2k/NDORS/reports/ExportPDF.aspx?rptstartdtm=2005-10-26 00:00:00&rptenddtm=2005- - Microsoft Internet Explorer

檔案(F) 編輯(E) 檢視(V) 我的最愛(A) 工具(T) 說明(H)

Daily Summary of Notifications of Infectious Diseases Received by HAHO
(2005-10-26 00:00:00 to 2005-10-26 23:59:59)

	AHNH	BBH	CCH	CMC	CPH	DKH	FYKH	GH	HHH	HKBH	HKEH	KCH	KH	KWH	LCK	MMRC	NDHFF	NLH	OLMH	PMH	POH	PWH	PYNEH	QEH	QMH	RHTSK	SCH	SH	SJH	SLH	TKOH	TMH	TPH	TWEH	TWH	TYH	UCH	WCH	WTSH	YCH
Acute Poliomyelitis	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Amoebic Dysentery	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bacillary Dysentery	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Chickenpox	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cholera	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dengue Fever	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Diphtheria	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Food Poisoning	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Influenza A(H5)	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Influenza A(H7)	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Influenza A(H9)	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Japanese Encephalitis	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Legionnaires' Disease	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Leprosy	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Malaria	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Measles	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Meningococcal Infections	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mumps	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Paratyphoid Fever	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Plague	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rabies	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Relapsing Fever	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rubella	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SARS	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scarlet Fever	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Streptococcus suis	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tetanus	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tuberculosis	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Typhoid Fever	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Typhus	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Viral Hepatitis	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Page 1

Report Date	Edit	Disease	Last Updated		P
* 2005 Oct 20 11:38		*Acute Poliomyelitis* (ICT Accepted)	SUPERGYN	2005 Oct 20 11:	
2005 Oct 20 11:28		Q fever	DR. SUPER MO EAN DORIS	2005 Oct 20 11:	
* 2005 Oct 20 11:13		Chickenpox (Denotified)	SUPERGYN	2005 Oct 20 11:	

Notifiable Disease | Communicable Disease

Acute Poliomyelitis	Leprosy	Scarlet Fever
Amoebic Dysentery	Malaria	*Severe Acute Respiratory*
Bacillary Dysentery	Measles	Streptococcus suis infect
Chickenpox	*Meningococcal Infections*	Tetanus
Cholera	Mumps	Tuberculosis
Dengue Fever	Paratyphoid Fever	Typhoid Fever
Diphtheria	*Plague*	Typhus
Food Poisoning	*Rabies*	Viral Hepatitis
Influenza A(H5) / Influenza A(H7) / Influenza A(H9)	Relapsing Fever	Whooping Cough
Japanese Encephalitis	Rubella	*Yellow Fever*
Legionnaires' Disease		

Patient Selection | QMH | MED | DR. SUPER MO EAN DORIS

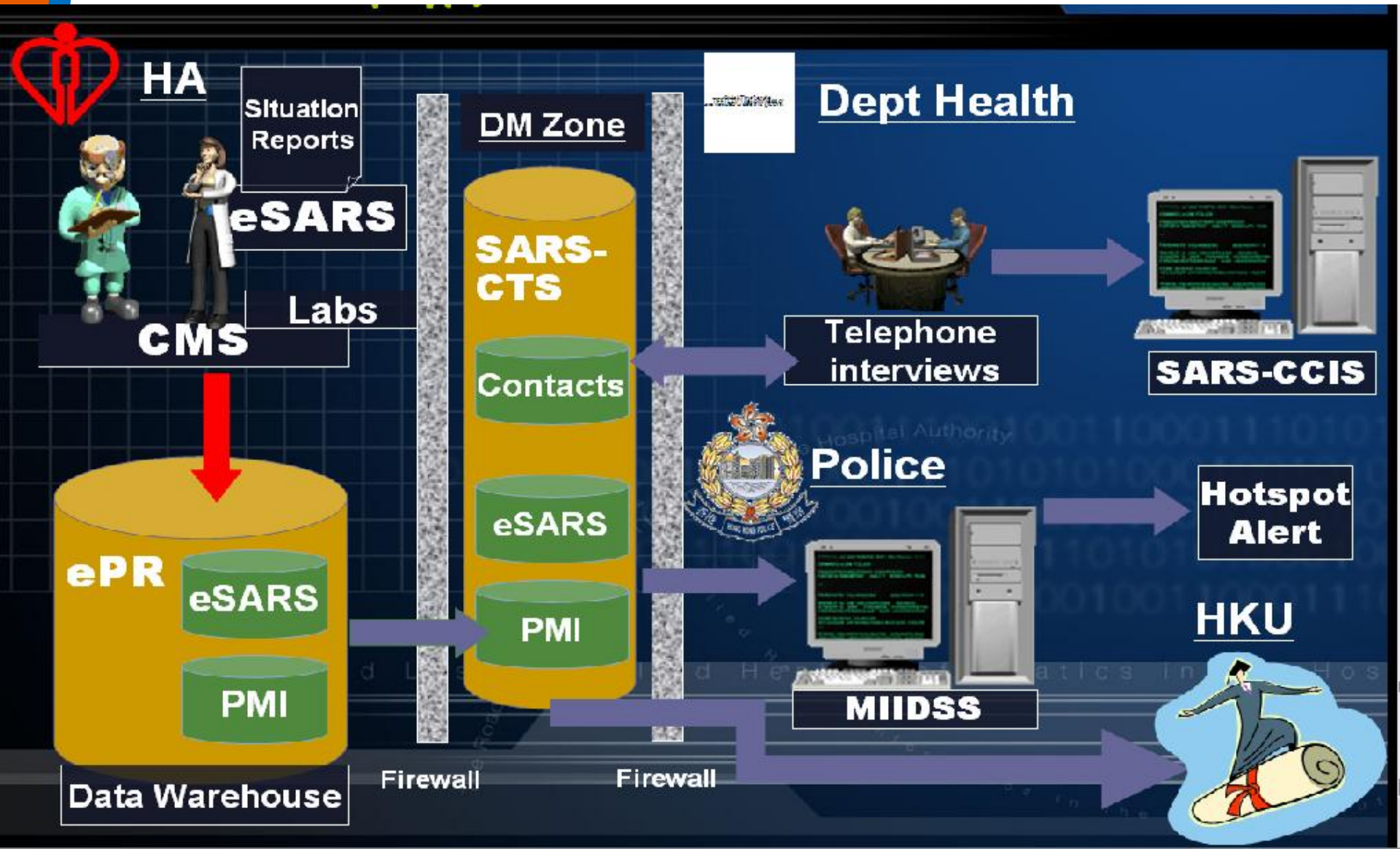
Systematic Training Programme and Certification for Healthcare and IT Practitioners

How IT helped the war on SARS

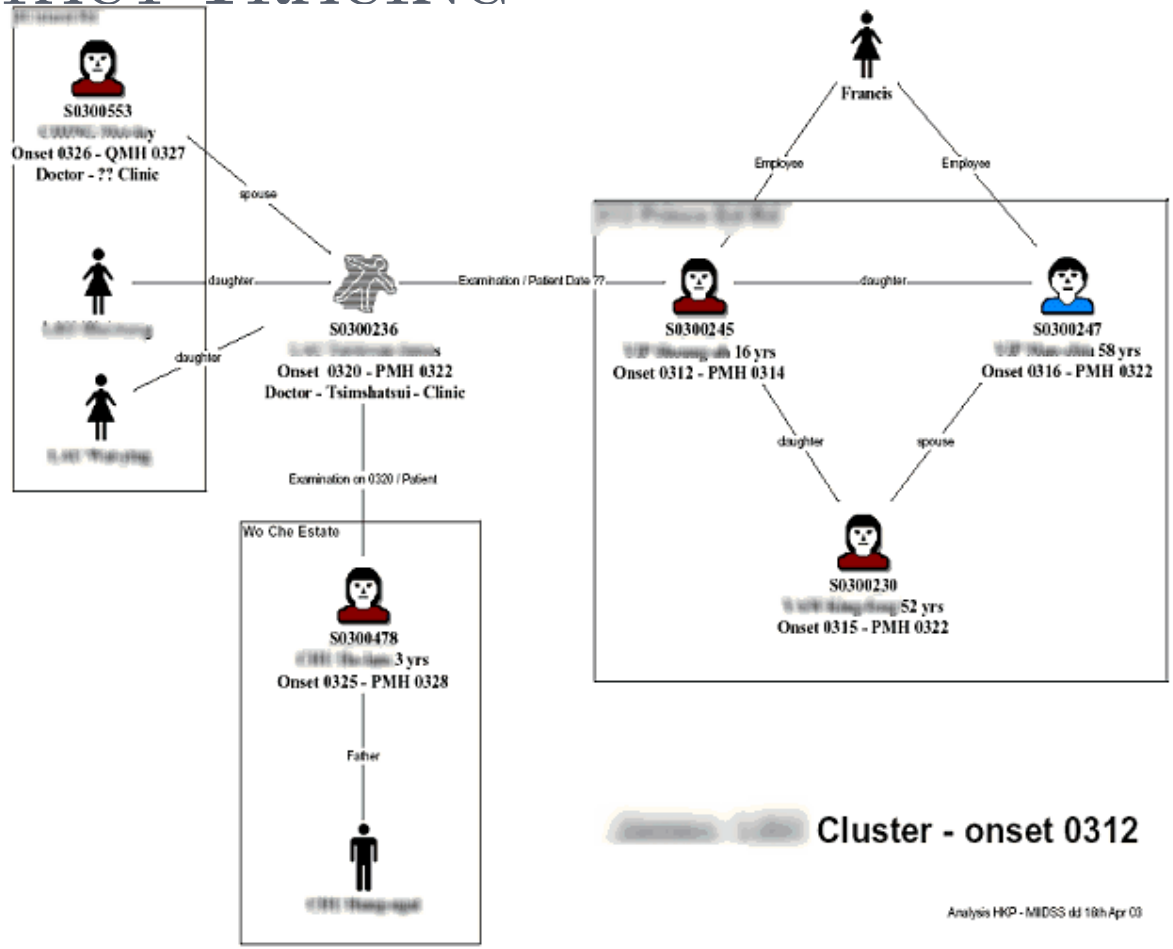
電子健康聯盟
eHealth Consortium Ltd

eSARS

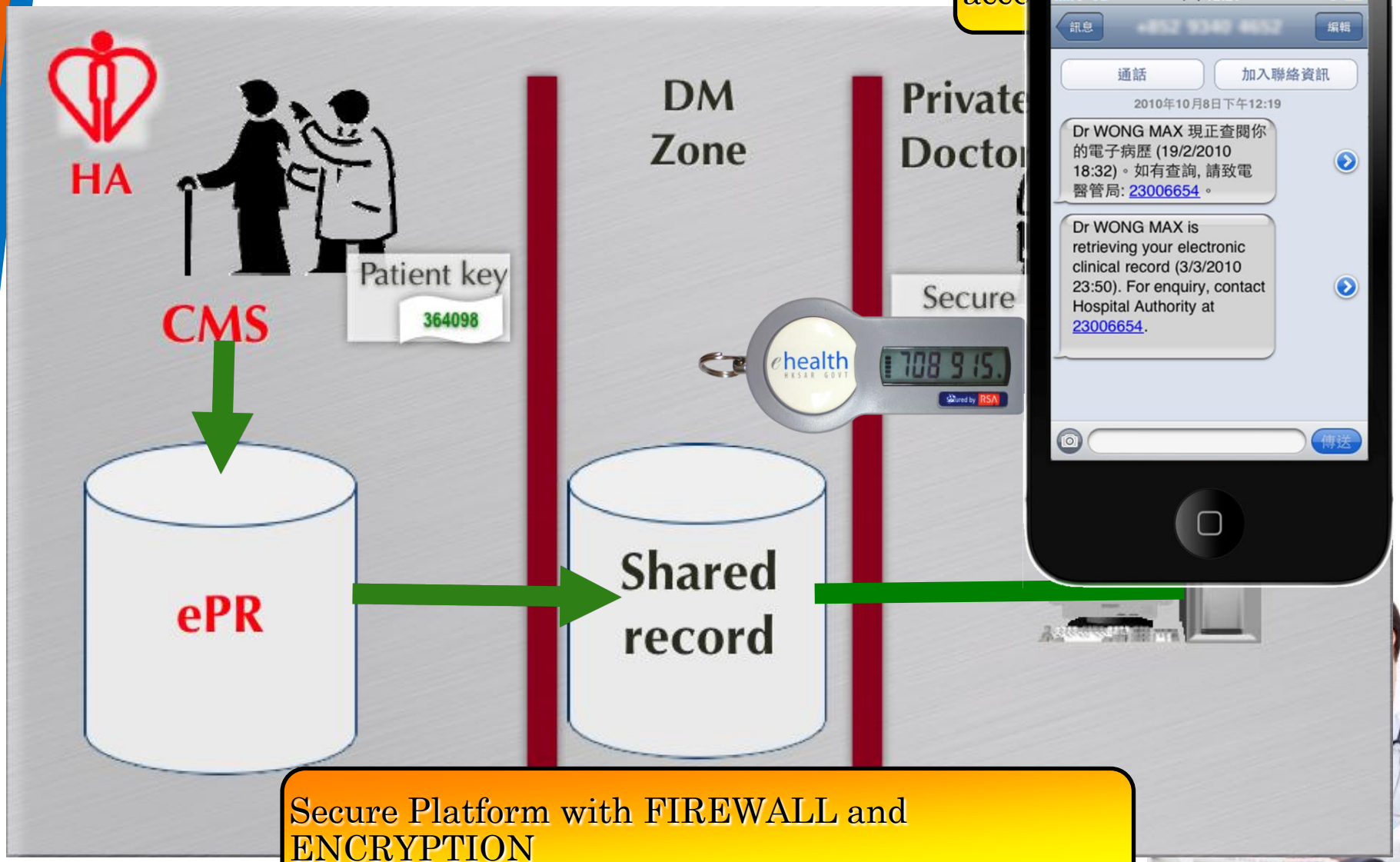
電子健康聯盟
eHealth Consortium Ltd



Contact Tracing



ePR sharing pilot



Secure Platform with FIREWALL and ENCRYPTION

Public-Private Interface - Electronic Patient Record Sharing Pilot Project
公私營醫療合作 - 醫療病歷互聯試驗計劃

Logon

User ID:

Continue

Log in to access this protected resource. If you don't remember your login information, contact your help desk or administrator.

醫院管理局
HOSPITAL AUTHORITY

Notice and Disclaimer for HA PPI-ePR Sharing Pilot Project

Hong Kong Hospital Authority
147B Argyle Street, Kowloon, Hong Kong Special Administrative Region, PRC.

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Chinese Medicine Information System
中醫醫療資訊系統

诊症病历记录

診療 - Microsoft Internet Explorer

2005年04月20日(星期三)

中醫醫療資訊系統

IT系統管理員

檔案 | 預約 | 掛號/登記 | 評估 | 診療 | 配藥 | 藥物管理 | 收費帳 | 查詢 | 統計報表 | 說明

診 療

中醫門診暨科研中心

求診人個人資料

求診人號碼 900000000312　身份證號碼 UP9003129　年齡 / 性別 25歲/男

英文姓名 LAM (姓) Siu Yuen (名)　中文姓名 林小丸　電話號碼 27110157

搜索 | 過敏記錄 | 求診人備忘

我的工具

求診日期: 2004/2005　科類: 門診內科

求診次數: 4

四診概要 | 診斷治則 | 非藥物治療

主訴: 用藥後症狀好轉，胃納可，睡眠可，二便調。

病史:

檢查:

脈象(左): PS0020 - 細　脈象(右): PS0020 - 細

舌色: TN0003 - 鮮紅　舌態:

苔色: TN2002 - 黃　苔質:

搜索 | 取消

病歷表 | 處方 | 候診人 | 下一位候診人 | 編輯 | 儲存 | 取消 | 離開

处方用药

處方 - Microsoft Internet Explorer

2005年04月20日(星期三)

中醫醫療資訊系統

IT系統管理員

檔案 | 預約 | 掛號/登記 | 評估 | 診療 | 配藥 | 藥物管理 | 收費帳 | 查詢 | 統計報表 | 說明

處 方

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英文姓名 LAM (姓) Siu Yuen (名)　中文姓名 林小丸　電話號碼 27110157

搜索 | 過敏記錄 | 求診人備忘

我的工具

處 方

藥物資料

內碼	藥物名稱	每劑份量	單位	備註
0ZMU01	知母	12	克	
0HBC01	黃柏	10	克	
0SDH01	熟地黃	15	克	
0SYA01	山藥	15	克	
0ZX02	澤瀉	15	克	
0FL01	茯苓	15	克	
0MDP01	牡丹皮	12	克	
0SZY01	山茱萸	12	克	
0BSH01	白芍	15	克	
0YCH01	菊陳	25	克	
0PGY01	蒲公英	20	克	
0DSH01	丹參	20	克	

服用日數: 4　每日服用劑數: 1　每劑服用: 2 次

共 12 種　外用

診症資料

求診日期: 20/04/2005　科組: 門診內科

求診次數: 4

處方 (共 1 張) 新增處方

新增處方 | 儲存處方 | 編輯處方 | 刪除處方

藥物類別 A - 中草藥

< 預設處方

藥物搜尋

搜索

常用藥物　所有藥物

艾葉 (共用)
百部 (共用)
補骨脂 (共用)
薄荷 (共用)
白花蛇舌草 (共用)

藥物藥性查詢

服用指示

煎藥及服用方法

清水三碗煎至一碗，飯後服

處方完 | 診療 | 候診人 | 下一位候診人 | 取消 | 離開

International recognition

Best in Class Around The World

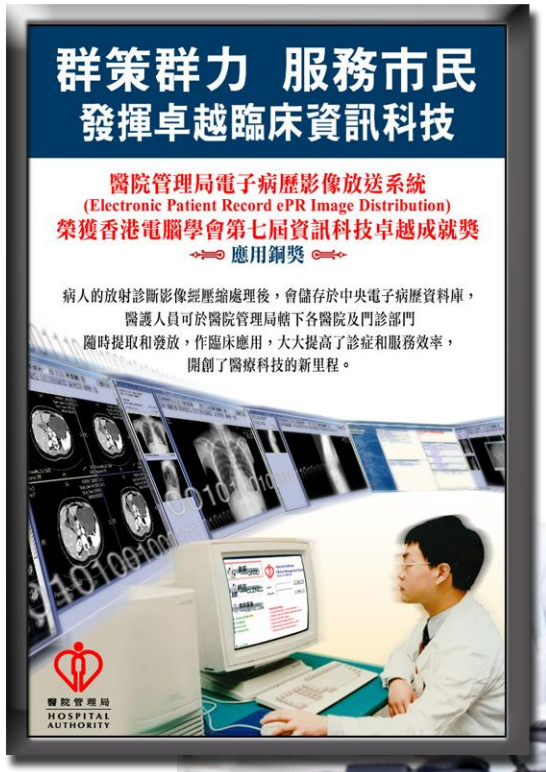
Project Implementation/ Scope Management	*Hong Kong*	•Focused Uniform Clinical Information Systems Project •Focus on Ancillary Integration •Probably not replicable anywhere else in the world
Components/ Innovations	*United States (Kaiser)*	•Advanced Models For Clinical Documentation •CMV and sophisticated rules engine management.
Security/Privacy	*Canada, UK Brazil, US*	•Clear Regulations with Enforcement Mechanism •Active Engagement of Consumer Advocacy Groups •Smart Card Solutions For Authentication except in U.S.

Dave Garets (Gartner Group)

電子健康聯盟
eHealth Consortium Ltd

Awards won

- 2004 Stockholm Challenge (Health)
- IT Excellence 2005
- APICTA 2005



Critical Success Factors

- Clinicians engagement
- Requested by the clinicians
- Designed by the clinicians
- Built for the clinicians
- Used by the clinicians
- Governed by the clinicians

電子健康聯盟
eHealth Consortium Ltd

Other Success Factors

- Unique citizen identity card
- Non-Big Bang Approach
  - Modular additions
- Home-built system
- Careful implementation policies
- Pilots sites
- Dedicated User training teams

World Trends in E H R

- Neighbouring countries: Taiwan, Japan and Korea are most advanced
- Singapore is competing

Clinical IT around the World

電子健康聯盟
eHealth Consortium Ltd

Focus for Obama Administration, **Health IT TZAR**
Private Sector Led, HIPAA, ARRA, HITECH etc Acts
US$25 Billion Stimulus for Subsidies starting later this year
Providers need to meet Meaningful Use Criteria to obtain $

National Program for IT - **NPfIT**, GBP 12 Billion, 6 Billion spent
Data Network, Choose & Book, Rx, EMR for GP's & PACS Done
Progress on ePR for Acute Trusts and National Spine is disastrous
3/5 Prime Contractors Exited – Everybody lost money

Health **InfoWay** National Coordination – Provincial Deployment,
C$ 10+ Billion Central Investment – C$2Billion spent
Health Sector need to fund most of own eMRs and ePR's,
GPs challenged, Variable progress across Provinces

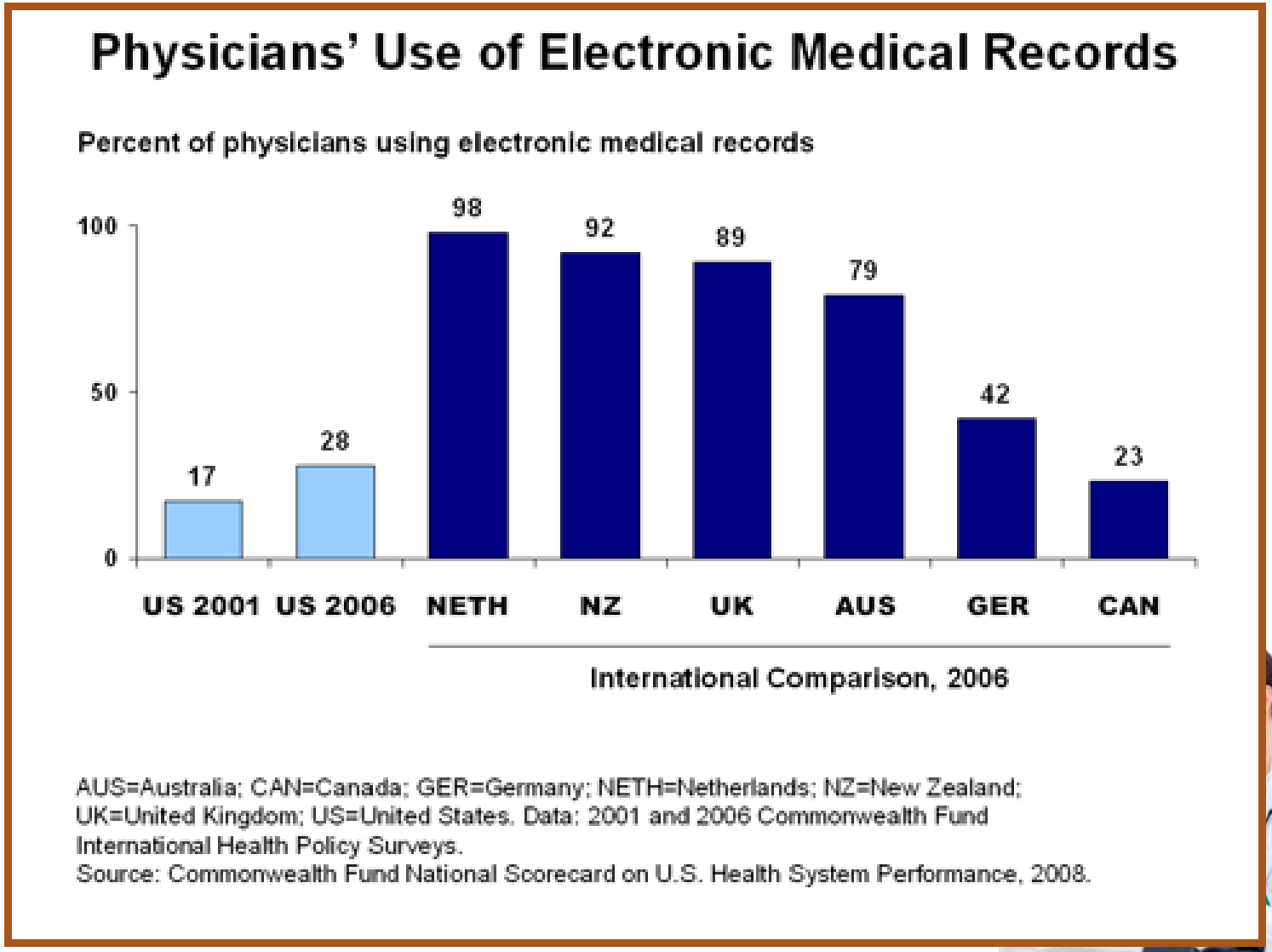
Feral Government leading via **NeHTA**, States to implement
Past lack of Clinician and HIT Industry Engagement
Very Slow Progress, Lots of small Pilots
After Election A$274 mil allocated for 2 years to make fresh start

Disparate Systems in Clusters, One use Package, One self developed
Strong local innovation – patchy deployment. ITS now a shared service
National eHealth Program, S$174 mil for a single ePR for all Public
Planned 2ND phase to include Private Sector.

HIMSS EMR adoption survey 2006

Stage	Cumulative Capabilities	% of USA Hospitals
Stage 7	Medical record fully electronic; CDO able to feed EHR as by-product of EMR	0.00%
Stage 6	Physician documentation, full CDSS (variance & compliance), full PACS	0.1%
Stage 5	Closed loop medication administration	0.5%
Stage 4	CPOE, CDSS (clinical protocols)	1.9%
Stage 3	Nursing Documentation, eMAR, CDSS (error checking), PACS	8.1%
Stage 2	CDR, CMV, CDSS interface engine, Document Imaging	49.7%
Stage 1	Ancillaries - Laboratory, Radiology, Pharmacy	20.47%
Stage 0	No Ancillaries installed	19.3%

EMR Adoption 2006



CROSS-NATIONAL COMPARISON

	Primary Care		Hospital Care	
	EMR	**CPOE**	**EMR**	**CPOE**
USA	17-18%	N/A	16%	5%
UK	>90%	>90%	8%	3%
Canada	19%	14%	<10%	25%
Australia	90%	75%	<10%	<1%
New Zealand	72%	90%	<10%	<1%
Netherlands	**95%**	**90%**	**<5%**	**<5%**

-- Jha 2006

Korea

	Strengths	Remarks
Computerization	95% of household using broadband CPOE : IP – 75%, OP – 70%,	eHealth not well developed EMR : 19%
Government support	Starting involving 5 ministries Health & Welfare / Industry, Commerce and Energy / Information & Communication / National Defence / Science & Technology 06 – 07 planning & development standards development , information architecture / privacy & security / Core technology 08 – 09 pilot telemedicine for military / elderly / high risk worksites eHealth applications RFID at point of care (POC)	
Health Data Standardization	Strong academic support	Application not defined

Singapore

	Strengths	Remarks
Hospital service	mainly public (SingHealth / National Healthcare Group)	
Primary care		Mainly private
Electronic Medical Record Exchange – 2004 – discharge summary, lab / radiology, prescription, OT reports		• Mainly PDF • Limited data sharing • Between public healthcare clusters

Japan

	Strengths	Remarks
Computerization	2006 • 60% hospital > 400 beds with EMR • 65% for hospitals > 400 beds with CPOE	EMR • 12% of hospital > 400 beds • 3% of clinics
Government support	IT strategy 2006 – healthcare is top on the list Interoperability of Health Information System Project – 1.5Byen – 04 – 07 – HL7 – CIO training course	
Health Data Standardization	2005 – Privacy law 2005 – Committee established – HL7, DICOM, CDA others – Promotion strategy 2007 – recommend standard code 2010 – mandate the use of standard codes	Issues not resolved : What should be shared Who will pay Which terminology to be used

Health IT Around The Globe

	HK	Australia	UK	USA
Manage	Corporate	Corporate	Local	Local
Funding	1.9% (5%)	2% (9%)	2% (6%)	4% (14%)
Operations	> Central	> Central	> Central	> Central
Software	In-House	Packages	Packages	Packages
ERP System	No	Yes	Yes	Yes
CPR System	Advanced	Implement	Implement	Advanced
Doctors Use	Most	Few	Few	Few
Outsource	No	Yes	Yes	Yes
ASP's	No	No	No	Yes
Local Vendor	No	Yes	Yes	Yes

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Systematic Training Programme and Certification for Healthcare and IT Practitioners

Concluding Remarks

- eHealth could improve efficiency, enhance governance and save patient's lives
- Technology advancement is only part of the development milestones
- Human coherence, participation, understanding and collaboration is the key to success
- Hong Kong is at the top of the world performers in eHealth Development