Clinical Management System – from a Clinician prospective
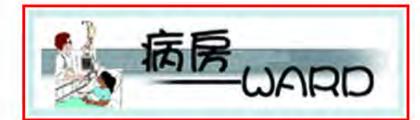
Dr CB Leung

Consultant

Department of Medicine and Therapeutics

Prince of Wales Hospital

Hospital Authority Convention

3 May 2016

1

病房 WARD

門診 CLINIC

Hospital Authority

CMS

Clinical Management System

Logon ID:

Password:

Logon

Useful Links

PWH Intranet Home Page

NTEC Intranet Home Page

HA Intranet Home Page

Staff Early Sickness Alert System

Clinical data access - FAQ

CMS Newsletter

Drugs Ingredient Search

Useful eKG Resources

ABBREV - (SEARCH)

Dendrite

Important Notes

1. All patient information is strictly confidential

2. Staff may only use the CMS for authorised purpose

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

6. Please change your password on a regular basis

User Guide   CMS feedback 任你講   HA IT Call Centre   PWH

Seasonal Influenza Vaccination Programme for staff starts on 15 Oct 2015. Get a Jab Now!
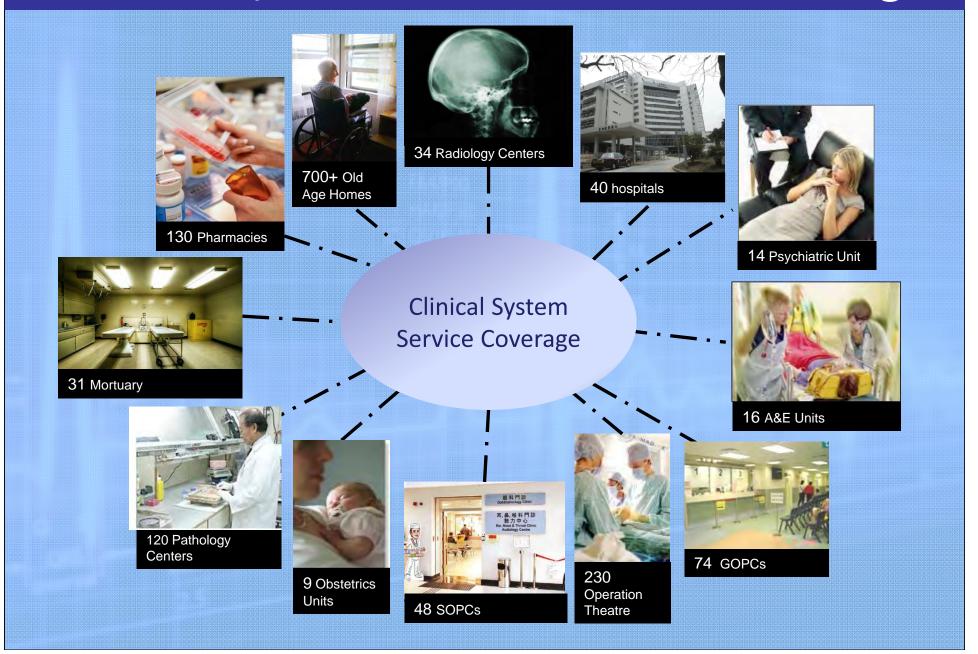
Review	Documentation	Ordering
ePR	Dx / Px Coding	GCRS
Dx / Px	Discharge Summary	Laboratory
Investigation results	Progress Note	Radiology
Laboratory	Consultation Note	Allied Health
Radiology	OT Record	OPMOE (Drug)
Images	Endoscopy Record	IPMOE (Drug)
Consultation notes		Letter (Attend cert, referral letter, reply letter...etc.)
AED		Consultation
OPD		Appointment bookings
In-patient		

醫院管理局
HOSPITAL
AUTHORITY

Clinical Systems - Service Coverage

130 Pharmacies

700+ Old Age Homes

34 Radiology Centers

40 hospitals

14 Psychiatric Unit

31 Mortuary

Clinical System Service Coverage

16 A&E Units

120 Pathology Centers

9 Obstetrics Units

48 SOPCs

230 Operation Theatre

74 GOPCs

Clinical Systems essential in HA

Each Day…

- 20,000 clinician users
- 100,000 patients
- 11m online transactions
  - Peak time: 600 Tran./ sec
- 1.8m ePR transactions

To Date…

- 10m patient records
- 1,000m Lab records
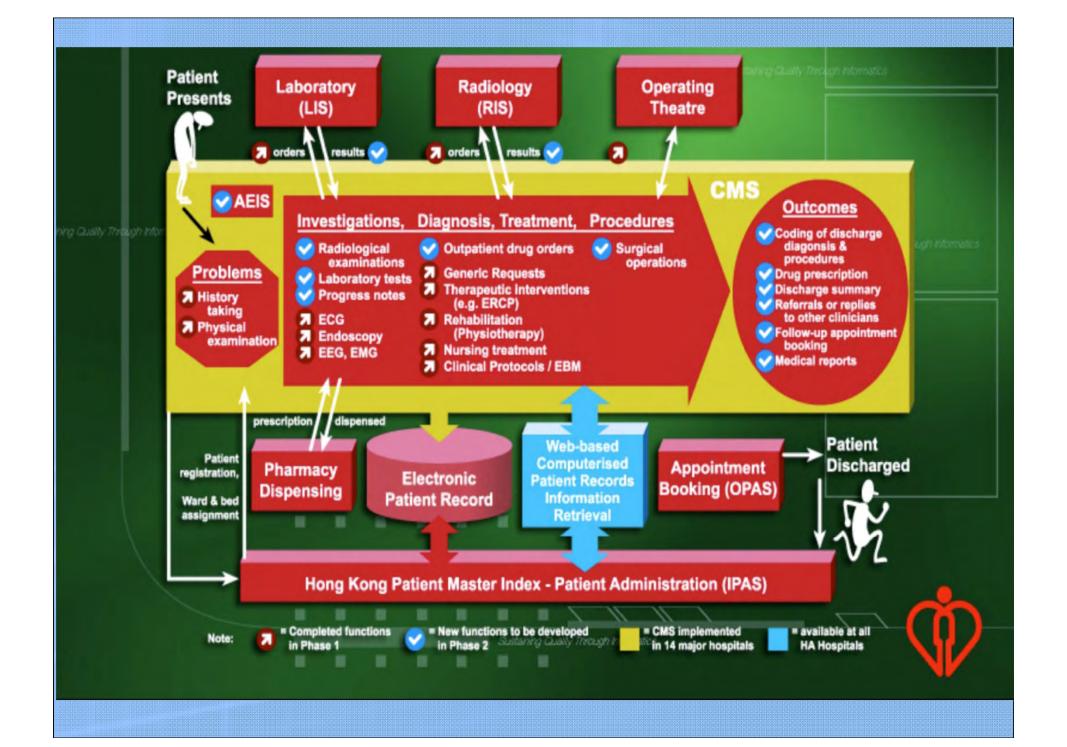- 300 Terra Bytes clinical data volume
- 800 Terra Bytes Rad Images

Rome wasn't built in a day

- or by one person, one team …
- Collaboration between Stakeholders
- Built for clinicians, with clinicians, by clinicians for the care of our Patients with clear business case
- From basic PAS, administrative data, to discharge medications, summary, Laboratory Information System, Generic for laboratory and radiology request, IPMOE and more
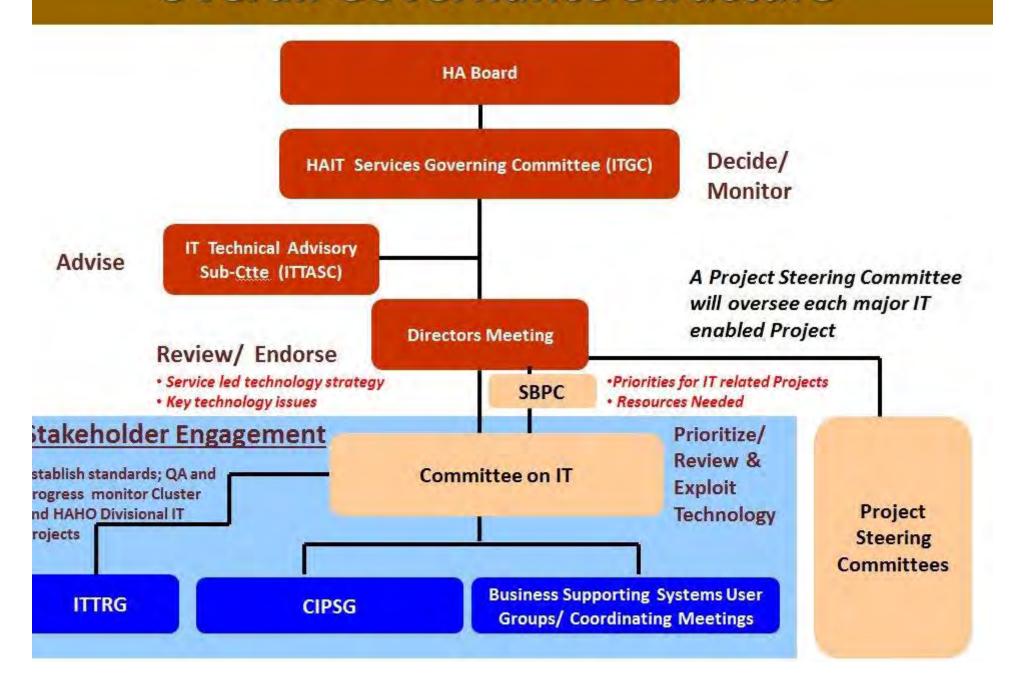- From one Department, Specialty, Hospital, Cluster, to all HA and all HKSAR (EHR) and the World

CMS Development in the HA
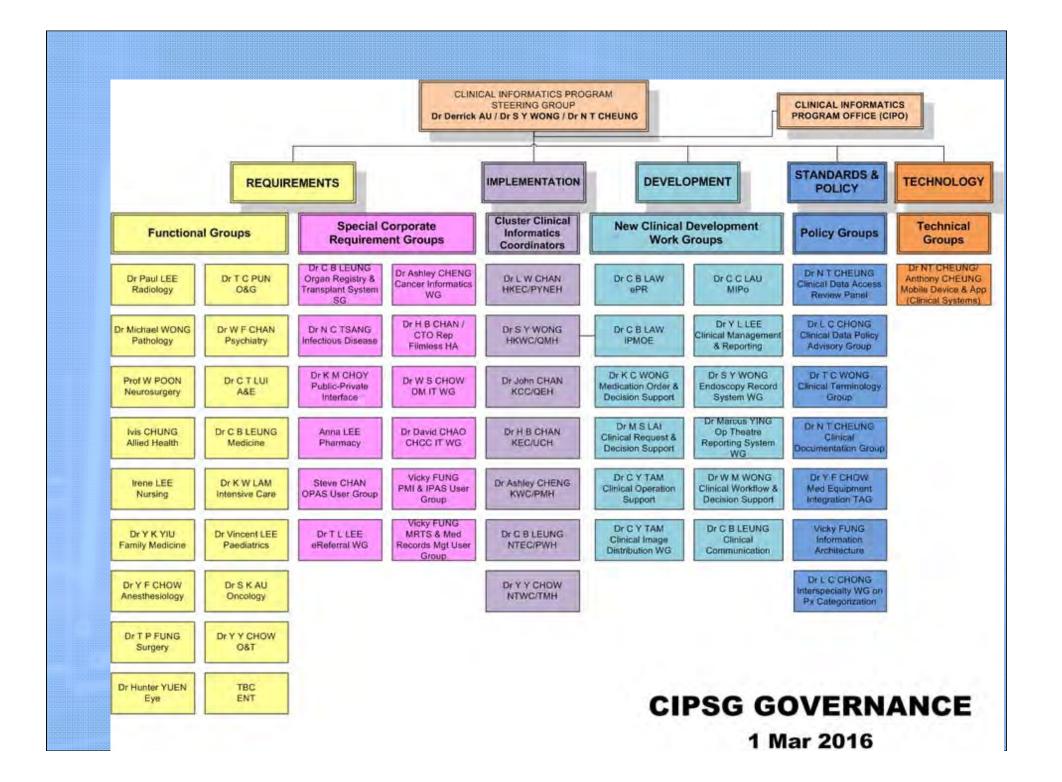# - a long and continuous journey

- 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
- +
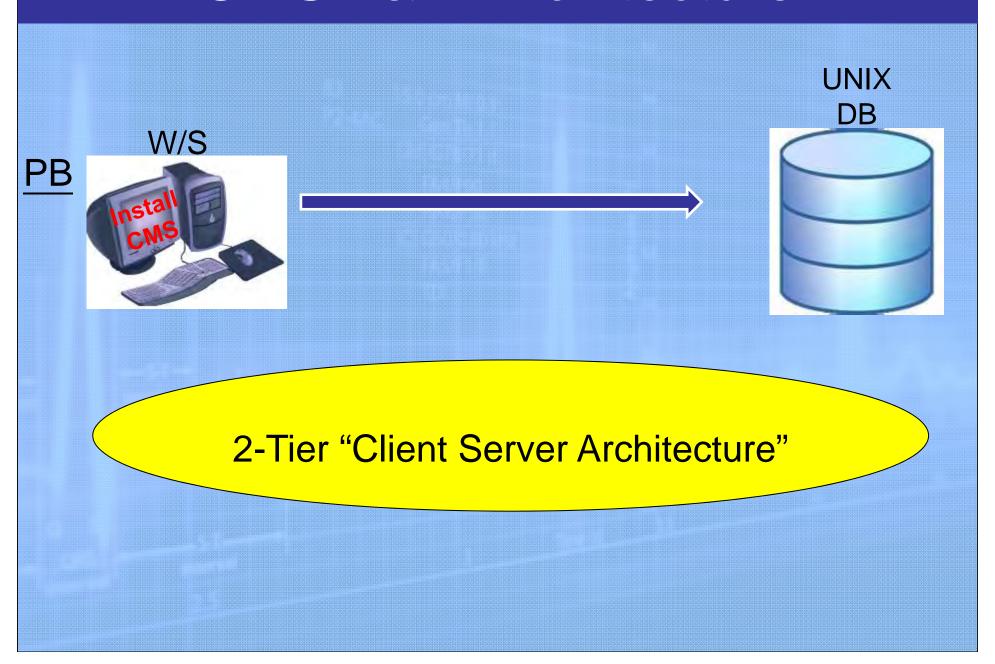- 2013 IPMOE (acute IP wards)
- ....

Overall Governance Structure

HA Board

HAIT Services Governing Committee (ITGC)

Decide/ Monitor

Advise

IT Technical Advisory Sub-Ctte (ITTASC)

A Project Steering Committee will oversee each major IT enabled Project

Directors Meeting

Review/ Endorse
- Service led technology strategy
- Key technology issues

SBPC

- Priorities for IT related Projects
- Resources Needed

takeholder Engagement

stablish standards; QA and rogress monitor Cluster nd HAHO Divisional IT rojects

Prioritize/ Review & Exploit Technology

Committee on IT

Project Steering Committees

ITTRG

CIPSG

Business Supporting Systems User Groups/ Coordinating Meetings

CIPSG GOVERNANCE
1 Mar 2016

CIPSG GOVERNANCE

1 Mar 2016

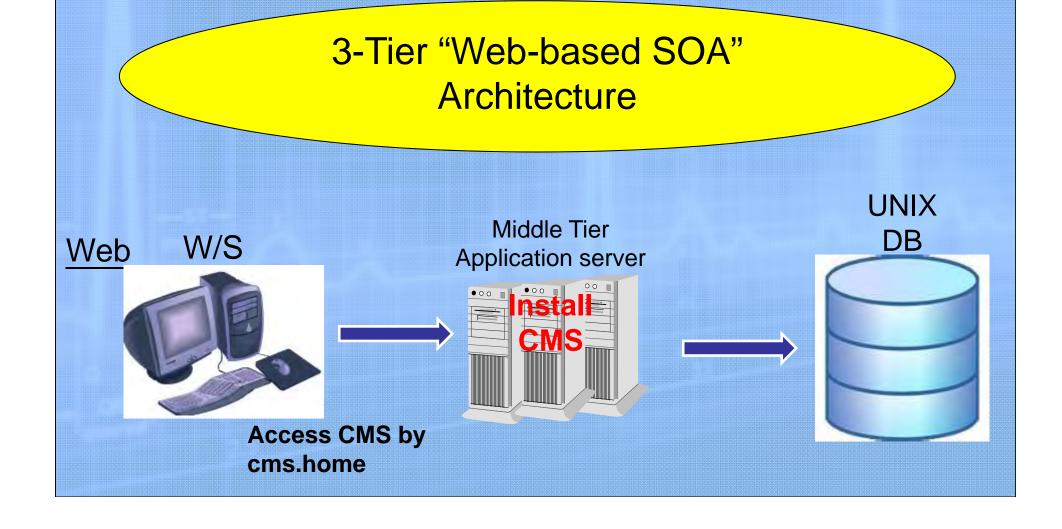# CMS I Strategy - 3 Stage Approach (1992 – 2001)

- ## Stage 1 (1992 – 1997)
  - Foundation databases
  - Inter-hospital/Clinic Network

- ## Stage 2 (1994 – 2000)
  - Intra-hospital Network
  - Diagnostic/Therapeutic I.S. of Clinical Departments

- ## Stage 3 (1998 – 2001)
  - Electronic Patient Record
  - Executive Information System/Decision Support System

CMS I & II Architecture

PB

W/S

UNIX DB

Install CMS

2-Tier "Client Server Architecture"

CMS III Architecture

3-Tier "Web-based SOA" Architecture

UNIX
DB

Web   W/S

Middle Tier
Application server

Install
CMS

Access CMS by
cms.home

CMS III Phase 2 (2014 – 2018)
6 Major Clinical Functions/Capabilities

Clinical Imaging

Clinical Workflow

Clinical Supporting Service (Lab/Rad/Pharm)

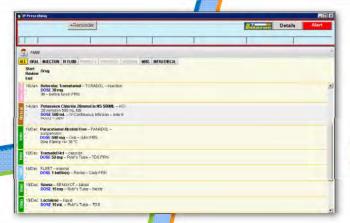**Nursing & Allied Health Documentation & Care Planning**

Clinical Decision Support

Clinical Information Management

What If …

- **Something happened?**
- **Major (whole HA is affected) IT Incident on 2016**

  - Mar 4   (1853-2010)
  - March 8   (0930-1000)
  - April 11   (1255 – 1315)

公院臨床資訊系統一度故障

- 醫管局發言人表示，臨床資訊管理系統於昨天下午接近1時發生故障，醫護人員未能登入臨床資訊系統儲存或索取病人病歷紀錄資料。在故障期間，病人就診時需要等候較長時間，但病人的病理化驗、放射檢查及配藥等服務均不受影響。經緊急維修後，於下午1時15分恢復正常，其中威院的系統運作則需延至下午2時20分恢復。經初步檢視，臨床服務及病歷資料的完整性在系統故障期間不受影響，但整體的病人服務效率就有所延遲。醫管局會深入調查事件，並為引致的不便向病人致歉。

Impact to PWH (non-exhaustive)

- Radiology
  - Delay in receiving the GCRS request in the afternoon. During downtime period two portable cases are record with manual form.

- Lab
  - Chem Lab: 12 using paper forms
  - Blood Bank: nil

- Pharmacy
  - OP about 70 manual prescriptions.
  - IP about 20 manual Rx.
  - GOPC 40 manual Rx for the 4 GOPCs

Impact to PWH (non-exhaustive)

- BTC
  - About 100 patients affected
  - Around 40 patient rebook to other dates
  - Another 50-60 delayed for 2 hours
  - IP blood taking affected
- LKS Med OPD
  - At least 45 patients affected in am clinic, either to same day pm session, some rebook next week; Late start of pm clinic
  - Retrospective entry of 24 patient information is needed.

Crisis Management

- Architecture and design

- Database management

- Downtime management

- Contingency planning, drill and execution

- Media handling and debriefing

- 4C approach (Command, Control, Coordinate and Communicate)

Crisis Management - 1

- New technology challenges
  - Window based Client server, Powerbuilder
  - Middle tiers software with Oracles, Sybase
  - iOS based and mobile technology
- Backup planning and Resilience; warm standby vs hot standby; Downtime arrangement; Reboot vs Fail rollover
- Manpower and expertise
- System availability – CMS and ePR

Crisis Management - 2

- Internal and external customers
- Helpdesk and mode of information availability
  - Pager
  - Use of Dashboard with regular updated Information?
  - HA Chat?
- Contingency Plan
  - Department, Hospital, Cluster, HA
  - Initiation and stand down
  - debriefing

Crises Management - 3

- 4C
  - Command
  - Control
  - Coordinate
  - Communicate

Some more ...

- Speed vs accuracy and safety
- Web Based Technology – buffer, latency, error messages and handling, multi-logins
- OP vs IP workflow
  - one size do not fit all
- Search technology - Google logic
- Links to resources / Data when required
  - Allergy history, structural data vs PDF

Even More …

- Data integration and Migration
  - Internal data and External Data
- HL 7 and other Languages
- Standardisation
  - data and fields
  - AOM – am, pm, BD vs Q12H, TDS vs Q8H, nocte …
  - DICOM, SNOMED …
- Word vs Database
- Big Data

SUMMARY

- Clinical vs Administrative
- Core business vs nice to have
- Establishment of business case and governance
  - referral letter, case mix, IPMOE, antibiotics stewardship
  - Clinician buy in and governance
- Automation and data transfer across different systems, both internal and external
- New Technology (both front end and backend. including mobile apps) challenges and Risk Management

CMS IV project

- 4 P CMS
  - *P*aperless CMS
  - *P*rotocol Driven CMS
  - Closed Loo*P* CMS
  - *P*ersonalized CMS
  - New clinical technology vision 2017-22
  - Commencement year: ***2018/19***
    - 2018/19 - 2022/23
    - 5 years for its development and implementation

Thank you !!