The Hospital Authority’s Clinical Management System

Dr. NT Cheung
Head (IT & Health Informatics) & CMIO, Hospital Authority
Consultant(eHealth), Food & Health Bureau
43 Public Hospitals
49 Specialist Clinics
73 General Clinics
29,435 Beds
84,501 Staff
28,957 Nurses
6,681 Doctors
HK$70B Annual Operating Budget (~US$9B)
6.2m GOPC Attendances
7.7m SOPD Attendances
2.1m A&E Attendances
1.8m Inpatient and Day Patient Discharges

Hospital Authority

90+% of hospital care in Hong Kong
eHealth in the HA
The Road Less Travelled

1990  “Green fields”
      Patient administration + Departmental systems

1995  Clinical Management System (CMS)

2000  CMS Phase II
      · Electronic Patient Record (ePR)

2003  eSARS

2008  CMS Phase III

2010  Filmless HA

2016  Inpatient MOE
      HK-wide eHRSS
      Mobile CMS
      CMS IV

2019+ Smart Hospital
      HA Go
      eHRSS Stage 2
Enterprise-wide Electronic Patient Record (ePR) for all HA Patients
Health Informatics in HK
3 Basic Steps

Support the processes of care
• Enter once, use many
• Enhance clinical workflow

Improve quality & safety
• Measure & monitor
• Continuous improvement

Build the electronic patient record
• Standardized & structured
• Comprehensive
• Accessible
Health Informatics in HK
The 4th Step

Enable new models of service delivery
Make data actionable
Engage patients in their care

Support the processes of care

Build the electronic patient record

Improve quality & safety
N.T. Cheung
The 7 Principles

1. The Customer is Always Right
2. Win-Win-Win-Win-Win
3. Medicine is both Art and Science
4. One Step at a Time
5. Use it or Lose it
6. Focus and Prioritize
7. Feed your Informaticians
Principle 1: The Customer is Always Right

Communicate, Engage, Align
Engagement is Key

CLINICAL INFORMATICS PROGRAM
STEERING GROUP
Dr K L CHUNG / Dr S Y WONG / Dr N T CHEUNG

CLINICAL INFORMATICS PROGRAM OFFICE (CIPO)

REQUIREMENTS

Functional
Dr Paul LEE Radiology
Dr S M MAK Pathology
Dr Calvin MAK Neurosurgery
Kis CHUNG Allied Health
Danny TONG Nursing
Dr Y F CHOW Anaesthesiology
Dr Kenny YUEN Surgery
Dr H W YUNG Eye

Dr K K TANG O&G
Dr P T HO Psychiatry
Dr C T LUI A&E

Dr C B LEUNG Medicine
Dr K W LAM Intensive Care
Dr Vincent LEE Paediatrics
Dr C S WONG Oncology

Dr B LEUNG Organ Registry & Transplant
Dr Raymond LAI Infectious Disease
Dr K M CHOY Public-Private Interface
Anna LEE Pharmacy
Steve CHAN OPAS
Dr K H LAU eReferral
Dr K S TANG Pat Discharge Information Summary

Dr Ashley CHENG Cancer Informatics
Dr Linda YU Filmless HA
Dr Andrew HO DM IT
Dr David CHAO CHCC IT
Vicky FUNG PMI & IPAS
Vicky FUNG MRTS & Med Records Management

Cluster

Clinical Development
Dr C LAW ePR
Dr B LAW ePMOE
Dr C B LAW eMACE
Dr C B LAW eKIC
Dr C Y YUNG Clinical Request & Decision Support
Dr P W YAM Clinical Operation Support
Dr B LEUNG eDCC MDC

Dr W CHENG / Dr Michael WONG KWC
Dr H CHENG / Dr I T LAU KEC
Dr E YUNG Clinical Image Distribution
Dr C Y WONG / Dr Kenny CHAN NTWC

Dr L W CHAN / Jane CHOY HKCEG
Dr S Y WONG / Carmen CHAN HKC
Dr Calvin MAK / Stephen TUNG KCC
Dr Calvin MAK / DM IT

Dr B LEUNG / Jane CHOY HKCEG
Dr S Y WONG / Carmen CHAN HKC

Clinical Development

Policy
Dr Simon TANG MIPo
Dr C SHEK Clinical Mgt & Reporting
Dr S H LAU Medication Order & Decision Support

Dr B LEUNG eMACE

STANDARDS & POLICY

INNOVATION

Advanced Technology
Dr N T CHEUNG / H L AU Mobile Device & App (CS)
Dr N T CHEUNG / L AU Patient Clinical App “HA Go”

[BC] Clinical Artificial Intelligence

CIPSG GOVERNANCE

44 groups
160 doctors
100 others
Hospital Authority IT Governance Structure

HA Board

HAIT Services Governing Committee (ITGC)

IT Technical Advisory Subcommittee (ITTASC)

Directors Meeting

HA Committee on IT

Stakeholder Engagement
- Establish standards; QA and progress monitor Cluster and HAHO Divisional IT Projects

ITTRG

CIPSG

Business Supporting Systems User Groups/Coordinating Meetings

A Project Steering Committee will oversee each major IT enabled Project

Advise

Decide/ Monitor

Review/ Endorse

Prioritize/ Review & Exploit Technology

Project Steering Committees

Integrate

Advise

Prioritize/ Review & Exploit Technology

Project Steering Committees

Integrate
Principle 4: One Step at a Time
Principle 5: Use It or Lose IT

Clinical care delivery

Management data should be a byproduct of clinical documentation
Generic Clinical Documentation (GCD) Thru’ Train

Clinical requirements & form creation

Entity definition and assignment

Data capture and storage

Ad-hoc inquiry & analysis

Forms

ePR

CDR

IAMS Form

CDARS
Example: Nursing Patient Assessment

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
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

[Edit]
# CDARS Report

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# with Pressure ulcer risk

# with no Pressure ulcer risk
THE 5 PILLARS OF THE NEXT-GENERATION CMS

CMS IV: The 5 Ps

Patient Centred
Paperless
Protocol Driven
Closed Loop
Personalized
Smart Hospital Blueprint

Smart Care

Smart Hospital Support

Smart Facility and Infrastructure

Smart Hospital Management

Smart Staff
AI Lab & AI Delivery Centre to Convert Ideas into Service Benefits

Users
- AI Lab
- AI Delivery Centre

Business Need

Outcome Evaluation & Fine-tuning

Operation & Monitoring

AI Model Development

AI Engine Implementation

IT
Build HK Healthcare Cloud Ecosystem

HA Service Units
External Care Providers
NGOs
HK Citizens

Data
HADCL
Algorithms & Models

Government of Hong Kong (GovHK)
eHR Sharing System

Public Cloud
Apps & APIs

Innovation for Care
Quality & Efficiency

Service Automation & Collaboration

Ecosystem Sharing & Smart Living
Closing Comments

- EMR and digital health technologies are powerful tools.
- To make them a positive force, focus intensely on the clinician and the patient.