Medical records: Past & Future

Time of Getting Medical records

Past
- 72+ hr

Future
- <1 sec

Plan: Land shortly. Continue antibiotic. Recheck。”
The Computerized Patient Record

Problem:
Up to 98,000 deaths annually in US

Solution:
Sharing saves life & US$ 77.8b annually
EHR: A Global Trend

UK

- NHS £12.4 billion programme to computerize the NHS

Canada

- Health Infoway investment total cost expected CAD 10-12 billion

AUSTRALIA

- Over A$1B in state initiatives

USA

- Kaiser Permanente invested US$4 billion in electronic patient record project
Healthcare Services in Hong Kong

<table>
<thead>
<tr>
<th>Public</th>
<th>Private</th>
<th>Chinese Medicine</th>
</tr>
</thead>
</table>

Population - 6.86 million
1104 km²
40 Public Hospitals
13 Private Hospitals
4500 Doctors in HA
5000 Doctors in private
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 with private sector
2008 – Filmless HA
2009 – CMS III and eHR
Drug ordering

Previous Prescription

<table>
<thead>
<tr>
<th>Date</th>
<th>Case No.</th>
<th>Ref.No.</th>
<th>Ordered by</th>
<th>Status</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>02/06/2004</td>
<td>TKG10274071(Z)</td>
<td>0881</td>
<td>TKG - TJK</td>
<td>Vetted</td>
<td>Out-Patient</td>
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<td>19/04/2004</td>
<td>SOPD0000771(S)</td>
<td>7597</td>
<td>MED - GEN</td>
<td>Vetted</td>
<td>Out-Patient</td>
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<tr>
<td>09/01/2004</td>
<td>SOPD0000771(S)</td>
<td>6350</td>
<td>MED - RESA</td>
<td>Vetted</td>
<td>Out-Patient</td>
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<tr>
<td>19/12/2003</td>
<td>SOPD0000771(S)</td>
<td>7440</td>
<td>MED - RESA</td>
<td>Vetted</td>
<td>Out-Patient</td>
</tr>
<tr>
<td>07/11/2003</td>
<td>SOPD0000771(S)</td>
<td>7487</td>
<td>MED - RESA</td>
<td>Vetted</td>
<td>Out-Patient</td>
</tr>
</tbody>
</table>

Prescription Details

- **BONJELA oral gel 15g**
  - oral: bd prn

- **LASIX (FRUSEMIDE) tablet**
  - oral: 20 mg daily

- **SENOKOT (SENNNA) tablet**
  - oral: 15 mg nocte prn

- **THYMOL GARGLE COMPOUND mouthwash 1 in 4**
  - buccal: bd

- **VENTOLIN (SALBUTAMOL SULPHATE) inhaler 100mcg/dose 200dose(s)**
  - inhalation: 2 puff(s) qid prn, dispense 2 vial

- **ATROVENT (IPRATROPIUM BROMIDE) inhaler 20mcg/dose 200dose(s)**
  - inhalation: 2 puff(s) qid, dispense 2 no start from TKOH med

- **MV (MULTIVITAMIN) tablet**
  - oral: 1 tablet(s) daily

Start Date: 22/06/2005
End Date: 16/08/2005

Hospital Code: VH
ePR (Drugs History)
Allergen list

- HA allergen list
  - to support decision support (Drug allergy/interaction)
### MDS Statistics (2008)

#### Drug Allergy Checking

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drug Allergy Alerts Raised</td>
<td>68,790</td>
<td></td>
</tr>
<tr>
<td>Alert Accepted</td>
<td>32,102</td>
<td>(47%)</td>
</tr>
<tr>
<td>Alert Overridden</td>
<td>36,688</td>
<td>(53%)</td>
</tr>
</tbody>
</table>

#### Drug Drug Interaction Checking

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>DDI Alerts Raised</td>
<td>10,975</td>
<td></td>
</tr>
<tr>
<td>Alert Accepted</td>
<td>3881</td>
<td>(35%)</td>
</tr>
<tr>
<td>Alert Overridden</td>
<td>7094</td>
<td>(65%)</td>
</tr>
</tbody>
</table>
We take pride in our current health care system. We will develop a territory-wide, patient-oriented electronic health record, through public-private-partnership.
Patient-oriented healthcare records

Family doctor concept; integrated primary and hospital care

Public-private interface and partnership

Electronic Health Records Sharing Infrastructure
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
Vision

DH

Private Hospitals

EHR Repository

Access Portal

Clinics software

HA ePR

PPP

CMS onramp

Private Hospitals

DH

Clinics software

HA ePR

Access Portal
3 eHR workstreams

- eHR Infrastructure
  - Building the core infrastructure for records sharing

- CMS extensions
  - Making HA’s eMR technology available to the private sector

- Standards
  - Enable interoperable medical records sharing and decision support
<table>
<thead>
<tr>
<th>Year</th>
<th>Hospitals</th>
<th>Clinics</th>
<th>Ancillary</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>Radiological image sharing with private hospitals; Integration of Healthcare Voucher scheme with eHR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>Pilot use of SmartID for patient authentication</td>
<td></td>
<td>Laboratory sharing</td>
</tr>
<tr>
<td>2011</td>
<td>CMS adaptation basic modules</td>
<td>Public consultation</td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>Begin patient enrollment</td>
<td>CMS on ramp</td>
<td>HK Drug table</td>
</tr>
<tr>
<td>2013</td>
<td>Shared records in Doctor Portal</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
According to the Benefits Model, eHR Shared Record and Medication Management capabilities should be prioritised.
Building Blocks for Patient safety

- Allergy
- Drug order
- Drug check
Structured Allergy

Allergy
(1) PENICILLIN
Certain: Allergic contact dermatitis

ADR
(1) ACERTIL (PERINDOPRL TERTBUTYLAMINE)
Severe: Angioedema

Alert
(1) G6PD Deficiency
Drug ordering
Summary

• Medication management is one of the key benefits of the eHR

• The HK Drug Table is being built to improve patient safety and enhance improve drug related functions

• The HK-wide eHR is a major health initiative requiring the partnership of the healthcare and IT sectors