Health Improvement in China: Roles of Health Information System

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China’s Health System Challenges

• **Access** 难 (e.g. overcrowding of hospitals)
• **Affordability** 贵 (e.g. wasteful resource use)
• **Appropriateness** 差 (e.g. safety issues)
Overcrowding of Hospitals
Over Prescription of Medicines
Worsening Doctor-Patient Relationship
Critical Roles of HIS

• A stronger HIS can facilitate healthcare improvement within a given system

• A stronger HIS can facilitate more effective implementation of health system reforms

• A stronger HIS can stimulate new reforms
Major Benefits of Health IT

• Improved access to patient data ➔ better care
• Better monitoring of public health patterns and trends
• An enhanced ability to conduct clinical trials
• The creation of new high-technology markets and jobs
• Support healthcare-related economic reforms

Source: President’s Council of Advisors on Science and Technology, December 2010
<table>
<thead>
<tr>
<th>Country</th>
<th>Ambulatory Care</th>
<th>Hospital Care</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>EHR</td>
<td>CPOE</td>
</tr>
<tr>
<td>USA</td>
<td>34%</td>
<td>40%</td>
</tr>
<tr>
<td>Canada</td>
<td>12%</td>
<td>11%</td>
</tr>
<tr>
<td>England</td>
<td>95%</td>
<td>85-95%</td>
</tr>
<tr>
<td>Netherlands</td>
<td>98%</td>
<td>85-90%</td>
</tr>
<tr>
<td>Australia</td>
<td>79%</td>
<td>65-98%</td>
</tr>
<tr>
<td>New Zealand</td>
<td>92%</td>
<td>78-97%</td>
</tr>
</tbody>
</table>
U.S. National Strategy

- The Health Information Technology for Economic and Clinical Health Act (HITECH) authorized incentive payments through Medicare and Medicaid to clinicians and hospitals when they use EHRs privately and securely to achieve specified improvements in care delivery
- Incentive payments up to $27 billion over 10 years
- $44,000 through Medicare and $63,750 through Medicaid per EP
HIS in China: Progress in Clinical Sector

• 85% of hospitals established hospital management information system
• 50% of the hospitals set up clinical information system
• 30% of the hospitals adopted EMR

数据摘自：2010/2011年度 中国医院信息化状况调查报告
HIS in China: Progress in Public Health

- Disease control
- Public health regulation
- Emergency response
- Maternal and child health
HIS in China: Progress in Social Insurance

- 234 Million Urban Employees
- 187 Million Urban Residents
- 835 Million NCMI enrollees
- Medical assistance
Major Challenges

- No Legislation
- Lack of National Coordinating Mechanism
- Lack of Standards
- Lack of Professionals & Education
- Meaningful use issues
The good news is...

Informed by successful pilot projects, China is capable of rapidly scaling up “Best Practice Models” across the country.
We Have Been Studying in Minhang
HIS in Minhang District, Shanghai

- Health card for residents
- Performance card for health workers
- 1,496,000 EHRs
- 12 community health centers
E-Health in Minhang: EHR Documentation of Providers’ Notes

• Physicians and nurses are able to record patient notes and data directly into the EHR during clinical encounters.

• Each patient is linked to his/her providers in the system.
E-Health in Minhang: Provider Order Entry

• Allows providers to input nursing orders, diagnostic testing orders, and medication prescriptions and refills online.
• Automatic medication dispensing
• Simultaneous updating of pharmacy inventories
• Potential reduction of medical errors
E-Health in Minhang: Patient Access

- Electronic health card
- Self check-in and payment with E-health card
- Self-service stations for: weight, height, blood pressure, serum glucose, serum cholesterol, pulmonary function, EKG, and bone density
2-Part Model of P4P

Data collection

Positive index

Quality index

Negative index

Community health center

Health care worker

Project Funding

Fundamental cost

\[
\frac{\sum \text{workload of each project}}{\text{general workload}} \times \text{quality index} \times \text{satisfactory index}
\]

Bonus

\[
\frac{\text{Project quota}}{\text{personal workload}} \times \text{negative index}
\]
Performance Indicator

Hypertension Management
(2006 - 2010)

Number of people with hypertension

Managed Hypertensive (%)

Effective Control Rate (%)

- Number of people with hypertension:
  - 2006: 29600
  - 2007: 76515
  - 2008: 122702
  - 2009: 153511
  - 2010: 149080

- Managed Hypertensive (%):
  - 2006: 22.20%
  - 2007: 79.93%
  - 2008: 92.15%
  - 2009: 96.80%
  - 2010: 98.20%

- Effective Control Rate (%):
  - 2006: 67.55%
  - 2007: 56.64%
  - 2008: 54.86%
  - 2009: 68.24%
  - 2010: 77.51%
HIS in China:
Progress Made, But Potential Big

HSPH China Initiative Plans To

• Monitor, evaluate and improve upon existing pilot projects on HIS in urban (e.g. Shanghai) and rural (e.g. Sichuan) China

• Demonstrate meaningful use of HIS by conducting multi-purpose longitudinal studies

• Work with the national policy makers to strengthen China’s HIS and health system

• Our collaborators: national - MOH (e.g. HIS Center, HMI), local – Shanghai & Sichuan, academic – Tsinghua, Fudan etc
Thank You!