“Enhancing the Development of Health Informatics in the Asia Pacific Region”

Dr CP Wong
President
Asia Pacific Association for Medical Informatics
Successful Development Examples

• Health Informatics Development started in 60-70’s
• USA, Germany, Netherlands, Switzerland, UK, etc are countries with matured developments in health informatics
The Asia Pacific is catching up

We have well developed systems in:

- Korea
- Japan
- Australia
- Taiwan
- Hong Kong
- Singapore
- Malaysia
- New Zealand
- China
- etc
The Asia Pacific is catching up

The following countries have keen interests in developing health informatics:

- India
- Vietnam
- Pakistan
- Sri Lanka
- Thailand
- Indonesia
- etc
The Asia Pacific to overtake USA

- “Led by China and Japan, and an emerging market in India, the Asia Pacific region will overtake the United States as the world’s largest Internet Market within 3 years.”

Research from Gardner’s DataQuest 2001
<table>
<thead>
<tr>
<th>Rank</th>
<th>Country</th>
<th>Total Internet Population (millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>USA</td>
<td>166.0</td>
</tr>
<tr>
<td>2</td>
<td>China</td>
<td>56.6</td>
</tr>
<tr>
<td>3</td>
<td>Japan</td>
<td>51.3</td>
</tr>
<tr>
<td>4</td>
<td>Germany</td>
<td>32.2</td>
</tr>
<tr>
<td>5</td>
<td>UK</td>
<td>29.0</td>
</tr>
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Source: Nielsen//NetRatings
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<td>2</td>
<td>Japan</td>
<td>51.3</td>
</tr>
<tr>
<td>3</td>
<td>South Korea</td>
<td>27.8</td>
</tr>
<tr>
<td>4</td>
<td>Taiwan</td>
<td>11.6</td>
</tr>
<tr>
<td>5</td>
<td>Australia</td>
<td>10.6</td>
</tr>
<tr>
<td>6</td>
<td>Hongkong</td>
<td>4.4</td>
</tr>
<tr>
<td>7</td>
<td>Singapore</td>
<td>2.3</td>
</tr>
<tr>
<td>8</td>
<td>New Zealand</td>
<td>2.0</td>
</tr>
</tbody>
</table>

Source: Nielsen//NetRatings
# Broadband Connections by Nation/Technology

**At-home Internet users**

<table>
<thead>
<tr>
<th>Nation</th>
<th>Cable</th>
<th>Satellite</th>
<th>ADSL</th>
<th>T1/Leased Line</th>
<th>Total Broadband</th>
</tr>
</thead>
<tbody>
<tr>
<td>Korea</td>
<td>18.6%</td>
<td>0.1%</td>
<td>38.6%</td>
<td>0</td>
<td>57.3%</td>
</tr>
<tr>
<td>U.S.</td>
<td>7.6%</td>
<td>0.5%</td>
<td>2.8%</td>
<td>0.2%</td>
<td>11.1%</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>6.0%</td>
<td>0.9%</td>
<td>1.2%</td>
<td>0</td>
<td>8.13%</td>
</tr>
<tr>
<td>Singapore</td>
<td>6.6%</td>
<td>n/a</td>
<td>0.5%</td>
<td>0</td>
<td>7.1%</td>
</tr>
<tr>
<td>Taiwan</td>
<td>3.5%</td>
<td>0.1%</td>
<td>2.6%</td>
<td>0</td>
<td>6.2%</td>
</tr>
<tr>
<td>France</td>
<td>4.0%</td>
<td>0.3%</td>
<td>1.7%</td>
<td>0</td>
<td>6.0%</td>
</tr>
<tr>
<td>Denmark</td>
<td>3.4%</td>
<td>0.0%</td>
<td>2.4%</td>
<td>0</td>
<td>5.8%</td>
</tr>
<tr>
<td>Germany</td>
<td>2.7%</td>
<td>0.1%</td>
<td>2.2%</td>
<td>0</td>
<td>5.0%</td>
</tr>
<tr>
<td>Spain</td>
<td>1.8%</td>
<td>0.2%</td>
<td>1.1%</td>
<td>0</td>
<td>3.1%</td>
</tr>
<tr>
<td>U.K.</td>
<td>2.3%</td>
<td>0.3%</td>
<td>0.5%</td>
<td>0</td>
<td>3.1%</td>
</tr>
<tr>
<td>China</td>
<td>0.2%</td>
<td>n/a</td>
<td>0.2%</td>
<td>0</td>
<td>0.4%</td>
</tr>
</tbody>
</table>

_Apr 2001_

*Source: NetValue*
The Digital Divide
<table>
<thead>
<tr>
<th>Percentage of Population Using the Internet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Country</td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>Canada</td>
</tr>
<tr>
<td>Australia</td>
</tr>
<tr>
<td>Singapore</td>
</tr>
<tr>
<td>USA</td>
</tr>
<tr>
<td>New Zealand</td>
</tr>
<tr>
<td>UK</td>
</tr>
<tr>
<td>Germany</td>
</tr>
<tr>
<td>Hong Kong</td>
</tr>
<tr>
<td>Taiwan</td>
</tr>
<tr>
<td>France</td>
</tr>
<tr>
<td>Philippines</td>
</tr>
<tr>
<td>Malaysia</td>
</tr>
<tr>
<td>China</td>
</tr>
<tr>
<td>South Africa</td>
</tr>
<tr>
<td>Thailand</td>
</tr>
<tr>
<td>Indonesia</td>
</tr>
</tbody>
</table>

Source: ACNielsen NetWatch

Oct 1999
7 Key Success Factors

1. National Commitment & Vision
2. National Financial Support
3. National Health Information Infrastructure
4. Data Standards
5. Health Informatics Education
6. Leadership & Workforce
7. International Collaborations
Top 5 Ways to Derail Your National EHR Strategy

1. Assuming Everyone Will Understand IT

2. Mandating Standardization & Assuming Anyone Will Listen

3. Implementation Money Will Fall From The Sky

4. All physicians want the same thing from an EHR

5. Architecture & Infrastructure are No Problem

- From Dave Garets: in 2nd National HealthOnline Summit 2003 Australia
1. The Government Support

- Strong government support in a lot of countries
- Only lip-service is not enough
- Strong commitment & strategic leadership required
- $$$ is important
- Government should lead also strategies in standards, privacy and networking
Government – Cyber Korea 21

- Super-highway by 2005
- Internet user training in all secondary schools and adults
- Financial support for starters
- Venture and R & D supports
Health Informatics in Korea


Develop

Mature

Enhance

Super HIS

Develop/mature (Korea)
Australia HealthOnline

- A Health Information Action Plan for Australia
- National Health Information Management Advisory Council
Australia HealthConnect

- Online health events at 3 years
- National framework at 5 years
- EHR centres at 6 years
- National EHR at 10 years
  - GEHR
  - General practice as leader
HealthConnect at Work

Information in (summary reports)

- GPs
- Community Nurse
- Pharmacist
- Hospitals
- Emergency room

HealthConnect Storage of key health information

Information out (tailored to need)

- Eg principal diagnoses, graphical summary of pathology results, discharge summaries, schedule of community services
  - GPs
- Health Summary, list of current medications, recent test results
  - Consumer
- List of current medications, allergies, principal diagnoses
  - Emergency room
People’s Republic of China
Strong Government Support

The ’95 15-year Plan 1995-2010: The Golden Health Project

9 Main Targets:
1. Setting Standards
2. Building Databases
3. Administrative Automation
4. Statistical and Policy Support Systems
5. Drug Inventory Systems
7. Pharmaceutical e-Commerce
8. Networking of Research & Education Services
9. Medical Informatics Service Structure
Taiwan
Major Projects

• Health Smart Card
  – 23 million smart cards for each citizen to store crucial healthcare information

• Medical Information Exchange Center
  – Inter-hospital exchange of patient information to provide personal health record to each citizen in Taiwan

• Electronic Patient Record
  – Promote electronic signature to be used in EPR
Major Projects (cont.)

• Health Certificate Authority (HCA)
  – Issue certificates (using PKI) for all hospitals and health professionals in Taiwan

• Telemedicine

• Certify Consumer Health Information Websites

• Health Information Network 2.0
Malaysia
Integrator of the Future Health System

- Telehealth will form the bridge to the realise the health system of the future.
- The *Personalised Lifetime Health Plan* (PLHP) will be the main integrator of the future health system.
- Individuals and families as well as care providers in both health sectors will utilise the PLHP to assist in the delivery of seamless and comprehensive quality care.
The Telehealth Flagship Applications

- Lifetime Health Plan (LHP)
- Continuing Medical Education (CME)
- Mass, Customized, Personalised Health Information & Education (MCPHIE)
- TeleConsultation (TC)
2. Government Financial Support
Health IT Around the Globe

Hong Kong: 1.3% of Health Budget (5% of GDP)
Australia: 2.0% of Health Budget (9% of GDP)
China: 0.5% of Health Budget
Japan: 1.0% of Health Budget (7% of GDP)
UK: 2.0% of Health Budget (6% of GDP)
USA: 4.0% of Health Budget (14% of GDP)
Japan
Remarkable Government Projects

Hospital information systems installation aid

- Recipient: about 100 hospitals
- **Funding rate: 1/2**
- Total purse: about 10 billion yen (91 million US$)
- Sponsor: ministry of health and welfare
- Purposes: to promote installation of order entry, EPR, departmental systems
- Conditions: use of standardized codes and protocols, cooperation to ministry senses
Remarkable Government Projects

**Medical network promotion by IT**

- Recipient: 26 hospitals
- **Funding rate: full**
- Total purse: about 5.8 billion yen (52 million US$)
- Sponsor: medical information system development center, by ministry of international trade and industry
- Purposes: to promote network-based local care by EPR
- Conditions: use of standardized codes and protocols
3. National Health Information Infrastructure

• “In the absence of a national commitment and financial support to build a national health information infrastructure, the committee believes that progress on quality improvement will be painfully slow.”

--Crossing the Quality Chasm: A New Health System for the 21st Century, IOM, 2001
Hong Kong
Integrated Healthcare Delivery

- Specialist Outpatient Clinics
- General Outpatient Clinics
- Health Information Infrastructure
- Private Group Practices
- Elderly Homes
- Private Practitioners
Multimedia SuperCorridor Flagship MSC
Malaysia

• 15 km wide and 50 km long
• Starts from the Kuala Lumpur City Centre
• Down south to the Kuala Lumpur International Airport
• Launched on the 27 Jun 1998
• SEVEN Flagship Applications:
  TeleHealth, Smart Schools, Electronic Government, Multipurpose Cards, R & D Clusters, WWW Manufacturing and Borderless Marketing or e-Commerce
Singapore
In June 1999, it reached 98% of homes in Singapore. Number of users grew over 60,000.

Singapore ONE is a national initiative which delivers a new level of interactive, multimedia applications and services to homes, businesses and schools throughout Singapore.

Singapore ONE comprises two distinct but integrated levels. The first is a broadband infrastructure level of high-capacity networks and switches. The second is a level of advanced applications and services that take advantage of the infrastructure's high-speed and high-capacity capabilities. This initiative takes place in Singapore's cosmopolitan urban environment, where an IT-literate population is ready to realise the full potential of Singapore ONE.

As the next millennium approaches, Singapore's IT2000 Masterplan is transforming the country into an intelligent island where information technology (IT) is exploited to the fullest to enhance the quality of the population at home, work and play.

Singapore ONE is a major milestone in the realisation of this vision.
Information Infrastructure in China

• The Golden Bridge project, (CHINAGBN), a nationwide public information network, began in 1993
• The Golden Health Project, begun in 1995
• The Golden Health Medical Information Network uses a special communications satellite channel to link the country, and ground communication lines to connect hospitals
• The first Golden Health link between Beijing, Dalian, and Guangzhou was established in winter 1996
Trends in Development of National Health Information Infrastructure

1. Movement from Proprietary to Open Systems
2. Cross Disciplinary Teaming
3. Acceleration of the Development of Standards
4. Data Standards

1. Safety & Quality
2. Interoperability & Scalability
Issues in Safety & Quality

- Data Quality & Integrity
- System Performance & Reliability
- Decision Support
Issues in Interoperability

- Collaborative framework for standards & infostructure management
- System Architecture
- Privacy
- Security & Authentication
- Messaging
Confidentiality

• “Medical Secrecy is central to the trustworthiness of the Health Care System, not only in the private interest of the patient. Trust is a fundamental ethical value in itself.”

Privacy

- "Inadequate, piecemeal approaches to policy & legislation, specifically related to health information, has operated as a clear & critical obstacle to the realization of benefits to be derived from e-health."

---USA Government 2000
Privacy

- Oct 95: European Union: “Directive on the Protection of Individuals with regard to the Processing of Personal Data and on the Free Movement of Such Data”
- Feb 97: Council of Europe: “Recommendation on the Protection of Medical Data”
- 1999 US Government: regulatory process pursuant to 264 of the Health Insurance Portability and Accountability Act
Other Governmental Support

- **Managing Political Mandate:**
  - Engagement of Parliament
  - Centralized Governance
  - Collaboration with Privacy Organizations

- **Public Private Sectors Collaboration:**
  - Public Sector focuses on design and specifications
  - Private Sector delivers technology solutions
  - Government maintains accountability

- **Security/Privacy:**
  - Clear regulations with enforcement mechanism
  - Active engagement of consumer advocacy groups
  - Smart Card Solutions for Authentication
5. Health Informatics Education

- Australia: Monash Univ, UNSW, Adelaide
- Japan: Osaka, Ehime, Mie, Kobe, Kyoto, Tokyo, Hamamatsu, Hokkaido…
- Korea
- New Zealand: Otago
- Taipei Medical University, Yang Ming, Tsu Chi
- Philippines: U of Philippines
- Singapore: NUS
6. Leadership & Workforce

- Follows the government’s devotion
- Follows Education Strategies
7. International Collaborations
The APAMI – Asia Pacific Association for Medical Informatics

• The International Medical Informatics Association (IMIA) launched the Asia Pacific initiative at its General Assembly in October 1993

• As a new and important regional group within the IMIA and it represents an extension of IMIA's global interests in promoting IT health

• To date, the APAMI family comprises of 15 member societies and 4 corresponding members
The APAMI – Asia Pacific Association for Medical Informatics

• An inaugural conference for APAMI was held in **Singapore in 1994**. Prof KC Lun was the Founding President.

• The 2\(^{nd}\) Conference was held in **Sydney in 1997**. Dr Branko Cesnik was the 2\(^{nd}\) President.

• The 3\(^{rd}\) Conference was held in **Hong Kong in 2000**. Dr CP Wong is now the 3\(^{rd}\) President.

• The 4\(^{th}\) Conference is now in **Daegu**. The 4\(^{th}\) Presidency will go to Korea.
Objectives

• To promote **regional co-operation** and dissemination of information in this field among countries in the Asia Pacific;

• To promote research and development in this field, particularly collaboration among countries in the Asia Pacific;

• To promote high standards in the application of work in this field;

• To encourage high standards in education in this field;

• To seek and maintain formal channels of communication with relevant professional or governmental organizations, particularly among countries in the Asia Pacific.
Multi-lingual / Cultural Diversity in the Asia Pacific Region

大力开展医药信息学术研究

--- 安国

中国电子学会医药信息学分会，作为专门从事医药信息学研究的民间学术团体，自1981年成立以来，不仅组织不断得到发展，学术研究活动也日益活跃，取得了一批很有价值的成果。先后主持召开了七次全国医药信息学学术大会。共出版论文集9册，汇集论文1400余篇。仅1998年学会就完成科研课题15项，组织各种形式的学术研讨会、
Committee for Asian Health Informatics Standardization (CAHIS)

Yun Sik Kwak, MD, PhD
Dept Med Info, Kyungpook Nat’l Univ Sch Med Daegu, Korea and
HI Standardization Committee, Korea
Need of CAHIS

There are some distinguishable differences in healthcare domain that are practiced in Asian countries as compared that in the Western countries. The major differences are as follows:

• The healthcare practice pattern and systems are different;
• Language and character related issues that distinguish Asia from the Western countries; and
• Traditional vocabularies used in healthcare in Asian countries which are based on the Ying and Yang philosophy.

Therefore, regional initiatives are needed to take place in order to harmonize health informatics (HI) standards that are practicable and compatible in and out of the region.
ISO/TC 215 and CEN/TC 251 activities deal with similar areas of interests and works, however, there is no apparent conflict between CAHIS and ISO/TC 215 since CAHIS will be dealing with Asian specific issues so that they shall be complimentary to each other. The CEN/TC 251 is effective only for EU territory. There is no similar activities currently being undertaken in Asia.
Scope

• The CAHIS shall generate list of existing and working HI standards (ISO and proposed CAHIS member countries) for harmonization.

• The regional HI standards shall define and standardize applicable data structures and elements, information models and system architectures which make them easy to localize HI within member countries and furthermore, HI shall be able to be shared internationally.

• The initial work items shall be in the areas of but not limited to healthcards, vocabulary, messaging and communications and electronic medical records.
Logistics

- There are several possible ways to organize and operate this initiative as shown below:
  - Governments of participating member bodies support this CAHIS;
  - APAMI supports CAHIS as a WG activity; and
  - Participating members from each country voluntarily donate time and space for the activities initially.
Proposed Member Countries

- Any APAMI member country can be represented as the member body if the country voluntarily pay the dues and they are followings:
  - Australia, China, Hong Kong, India, Indonesia, Japan, Korea, Malaysia, Mongolia, New Zealand, Philippines, Singapore, Sri Lanka, Taiwan, Thailand, Vietnam, etc.
- Charter/Founding Member Countries:
  - Australia(?), China(?), Hong Kong, Japan, Korea, Singapore, Taiwan
Proposed Working Groups

WG, Electronic Health Record
WG, Messaging and Communication
WG, Healthcards
WG, Vocabulary
WG, Character
Expected Outcome

• The outcome of this initiative will promote Asian HI industry to take a strong position in the international market.
• This will stimulate growth and implementation of HI within the healthcare systems in Asian countries.
• This will stimulate and promote education of HI specialists in the region so that it further stimulates the growth of HI within the region.
APAMI Working Group on Developing Countries

• promulgate ways and methods to enhance the deployment of health informatics and health information systems;
• develop training materials of health informatics
• formulate mechanisms to share current development in HI industry and related areas.
Consumer Focus

- Accessible personal health information
- Access to appropriate online health resources
- Education
- Self Management
Bioinformatics

Ligand Binding Domain of Retinoic Acid Receptor
Infectious Disease Surveillance with IT Support

- During the SARS period, Hong Kong Hospital Authority developed the eSARS network
- Connected Hospital Authority, Dept of Health & Police Computer System with GIS
Announcement:
- Only dedicated person is allowed to login eSARS home, please contact Mr. Ming CHU, HCPS&HR EM(AH)1 (Tel No. 2300-6896) for application.

User Guide:
http://esars.home/doc/eSARS_user_guide.doc
Concluding Remarks

- There is still **room for improvement in the development of Medical Informatics in the Asia Pacific Region.**
- There is very **strong government determinations** to develop IT in most Asia Pacific countries.
Concluding Remarks

• Technical Infrastructure in Telecommunication is important.
• Government Commitment in Leadership, Finance, Infrastructure, Education and Policies are essential.
• Importance of Privacy.
Concluding Remarks

- The development of a region-specific Health Informatics Technical Standard could be useful.
- Developed countries should assist the developing countries by offering expertise, support, education, and communication channels.
謝謝各位
ありがとう ございます
감사합니다
Thank you