China HIT Case Study

CENTER FOR HEALTH AND AGING
Health Information Technology and Policy Lab

NBR

Grace Yu, *China Project Manager,*
Dorenfest China Healthcare Group*

Summary

Economic reforms in the early 1980s resulted in major changes in China's healthcare system, especially as a result of the dismantling of the rural cooperative medical system. After being given considerable financial independence, hospitals began to generate the majority of their income through user fees, a practice that continues today. Healthcare is now provided on a fee-for-service basis. The pricing structure attempts to facilitate equity by providing basic care below cost, with profits reaped through the (often excessive) sale of drugs and high-technology services; this structure leads to inefficiency and inappropriate patient care. Healthcare insurance coverage in China is low, with less then 30% of the population receiving any medical insurance.

China's HIT development has a brief history. Development commenced in the mid-1990s with financial management systems; only in the last five years or so have clinical systems been implemented. China has made great progress in a relatively short time period, but weak application software and a scarcity of implementation skills delay further progress. Most Chinese hospitals hope to dramatically improve and extensively digitize their work processes in the near future.

HIT Adoption

Health IT is now entering its second software generation in China, and IT usage in hospitals resembles that of the late 1970s in the United States. Most hospitals in China incorporate IT software into their payment and billing systems, and many have also begun integrating IT into clinical systems in the past five years.

The use of IT in clinical systems has emerged on a departmental basis. As a result of inexperience with IT infrastructure, however, hospitals have encountered several obstacles. Fragmentation, duplicative systems, and poor integration between diverse software systems have created "information islands" that impede data sharing.

Three valuable lessons are evident from China's HIT development over the past ten years:

- Medical information should be integrated across all departments in the hospital. Poor integration of diverse software systems within hospitals impedes inter-hospital information exchanges and creates problems as IT use expands.
- In order for IT systems to benefit clinical services and hospital management, effective overall IT planning is necessary. Oversimplification of IT planning and a lack of clinician engagement have in the recent past led to poor return on investment (ROI) in HIT.
- Implementation requires not only strong project-management skills but also attention to end-user requirements and needs as well as to work processes re-engineering. Poor implementation has resulted in a large amount of work-process redundancy.

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* For more comprehensive information on health IT in China, contact the author at (yuz@dorenfest.com) or Sheldon Dorenfest, President, Dorenfest China Healthcare Group at (Sheldon@dorenfest.com).

Government Policy

The Chinese government adopted an "informatization" approach in the 1990s, promoting IT development in all major industries, including the health sector, with one goal being to bridge the information divide. HIT policy began in 1995 with the "Golden Health Project," which sought to create the foundation for electronically linking health administration departments and hospitals as well as medical education and research institutes.

Government efforts in the 21st century increasingly focus on health IT. For example, the 2003–2010 Ministry of Health Guidelines for HIT Development in China call for the introduction of EHRs and regional health information networks to be implemented throughout the country. Many hospitals are considering system-wide upgrades, and larger budgets are more readily available for these kinds of investments.

Who Drives HIT?

The Ministry of Health within the government and independent hospital administrators are the primary drivers of HIT adoption in China. Following the SARS epidemic, the Chinese government realized the importance of integrating an effective IT infrastructure into the country's health system. Additionally, after a decade of small investments in IT systems hospital leaders have become aware that IT can improve work processes and increase management efficiency.

Many other associations involved in HIT thrive in China, including the National Medical Information Education (NMIE) organization, Association of Chinese Health Informatics, Chinese Health Information Association, and Chinese Hospital Information Management Association (CHIMA). CHIMA is a branch of the Chinese Hospital Association, a non-profit national industry and academic association focused on Health IT (similar to the AMIA in the United States).

Who Pays For HIT?

Provincial and local governments in China are the primary funders for regional health information networks and HIT in public hospitals. The national government facilitates investigation of standards and IT infrastructure development. Hospitals invest their own funds into clinical and institutional HIT systems.

China currently spends a little over 0.7% ($700 million) of its national health budget on HIT. Of these funds: 70% goes toward hardware, 20% toward software, and 10% toward services.

Challenges

Chinese software in its infancy	Chinese hospital application software currently has limited capabilities, and Chinese software vendors are not as experienced in healthcare applications as foreign vendors. Proven products for clinical information systems do not yet exist.
Lack of skilled HIT professionals	Skilled workers with IT and healthcare and hospital management knowledge are lacking in China.
Lack of strong change management expertise	Strong change-management expertise is missing in China. The great challenge facing many Chinese hospitals is that they have limited experience to manage the changes after implementing major IT systems. Thus, many hospital leaders are hesitant to increase IT investment.

Current Exemplars

Shenzhen Regional Health Information Network (RHIN)	The Chinese government established as a national goal the implementation of a series of RHINs supported by digital hospitals throughout the country by 2010. The Ministry of Health selected the city of Shenzhen as a pilot site for the development of these RHINs.
Chinese CDC surveillance system	Responding to a request by the Ministry of Health in 2003, the Chinese CDC created a national web-based surveillance system for 37 communicable diseases to receive direct reporting from the majority of hospitals at the county level and above and from more than half of hospitals and clinics at the township level.
Lack of strong change management expertise	Shenzhen will support this RHIN by digitizing all of its hospitals, thus creating more efficient work processes and better management systems to improve healthcare delivery. The Ministry of Health hopes that the Shenzhen RHIN will become a model of what can be done in China.

Future Direction

Spending on healthcare in China will grow dramatically over the next five years, potentially rising to 7% of GDP. HIT spending in China will likely grow even faster, with China's national goal to create EHR and regional health information networks throughout China. Major IT upgrades are now being considered in many hospitals. The focus of future HIT development in China includes the following:

- electronic health records
- regional health information networks to share electronic health data
- better integration of diverse systems within individual hospitals, including agreement upon standards to support IT progress, and better management of change so that the new IT systems will make Chinese hospitals operate more efficiently

In order to accomplish these objectives over the next several years, hospitals will involve outside experts for IT planning and implementation of the new systems. To support the HIT goals of China, better software will emerge from both Chinese software companies and Western software companies that will produce China versions of their software.
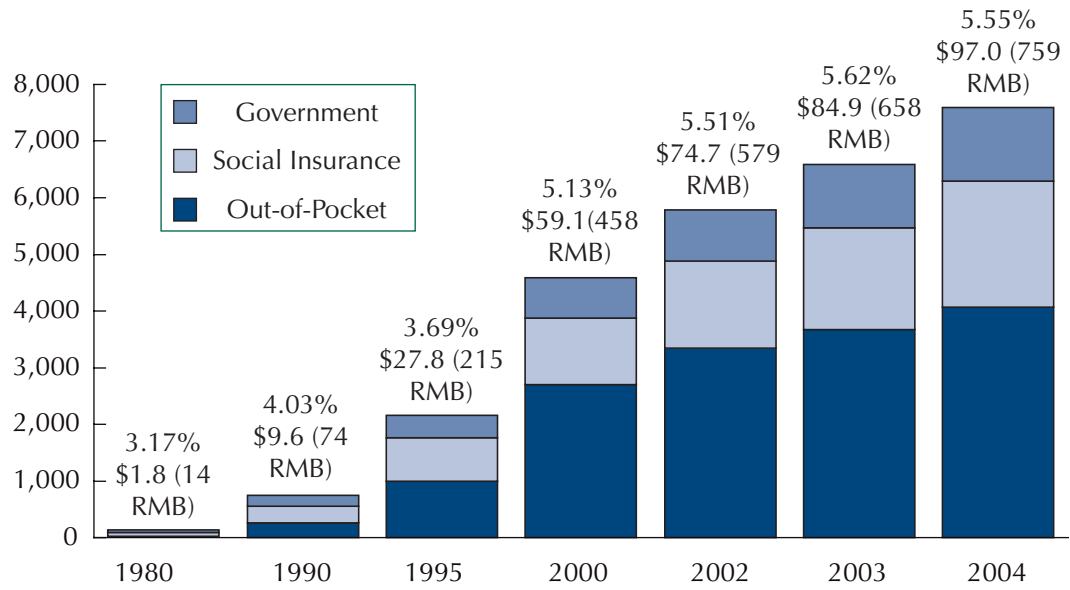
Healthcare Landscape

Expenditure

China spent $97 billion, or 5.6% of its GDP, on healthcare in 2004. As previously stated, public spending on healthcare remains low; public spending in 2004 accounted for only 17% of total healthcare expenditure while out-of-pocket expenses reached 53.6%.[1]

Coverage

About 130 million people are covered under the National Social Insurance Program for Urban Employees, a program established in 2005. Another 50 million people are covered through government insurance. Yet less than 30% of the China's population has medical insurance. Indeed, over 40% of the urban population and 57% of people in rural areas have no coverage at all.

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[1] China Healthcare Statistic Yearbook 2006.

ECONOMY

Healthcare cost as a percent of GDP (USD and RMB in billions)*

8,000

- ■ Government
- ▢ Social Insurance
- ■ Out-of-Pocket

7,000

6,000

5,000

4,000

3,000

2,000

1,000

0

3.17%
$1.8 (14 RMB)

4.03%
$9.6 (74 RMB)

3.69%
$27.8 (215 RMB)

5.13%
$59.1(458 RMB)

5.51%
$74.7 (579 RMB)

5.62%
$84.9 (658 RMB)

5.55%
$97.0 (759 RMB)

1980   1990   1995   2000   2002   2003   2004

Infrastructure

China's current healthcare system is primarily composed of large public hospitals, supplemented by a small number of private, for-profit hospitals. As of 2005, there were 18,703 hospitals in China. Among them, 2,027 were private hospitals (10.83%). Chinese hospitals can be divided into three categories: general hospitals (70%), traditional Chinese medicine (TCM) hospitals (14%), and specialty hospitals (16%).

In addition, China has 5,895 outpatient facilities: 1,266 outpatient facilities and 541 traditional medicine facilities. As of 2005 China had 1,938,272 registered doctors who are primarily employed by hospitals.

* Source: China Healthcare Statistic Yearbook 2006.