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Healthcare

Healthcare in China

Toward greater access, efficiency and quality

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Introduction

China's economic and social reforms over the past 25 years have met tremendous success. During this period, China's per capita gross domestic product (GDP) increased from 379 RMB (US$219)[1] in 1978 to 9101 RMB (US$1099) in 2003,[2] leading to dramatic improvement in the standard of living for many Chinese, especially in urban areas. However, this economic growth has not resulted in better health and healthcare in China. Healthcare has been largely neglected, as the responsibility for providing comprehensive healthcare shifted away from state-owned enterprises (SOEs) and successful rural programs (for example, the "barefoot doctors"[3]) were dismantled without establishing an alternate system.

The development of the healthcare sector is now far behind economic development in China.[4] A review of China's key health indicators makes clear the case for change. Life expectancy and infant mortality trends, for example, illustrate that although China's healthcare system has made progress over the last ten years, improvements have slowed recently.[5] Similarly, indicators such as the reported incidence and mortality rates from infectious diseases have increased in recent years.[6]

Healthcare expenditures as a percentage of GDP have been increasing in China,[7] but remain low when compared to developed countries and even some other developing countries. For example, China spent 5.8 percent of its GDP on healthcare in 2002, as compared to 8 percent by Organization for Economic Cooperation and Development (OECD)[8] countries and 5 percent by other developing countries, such as South Africa (8.7 percent), Brazil (7.9 percent) and India (6.1 percent).[9]

Inadequate spending is only part of the problem. Just as serious are the lack of access to affordable healthcare, the inefficient use of healthcare resources and a lack of high-quality patient care.

Without changes to the current system, more than 500 million Chinese will continue to find medical treatment out of their reach, due to the high cost of seeing a doctor.[10] On the bright side, the efficient reallocation of even relatively small amounts of money can go a long way to improving access to affordable healthcare for literally hundreds of millions of Chinese, especially in rural areas.

Improving the healthcare system is important to raise living standards, and is a key requirement to achieve the "*xiao kang*" objectives (in which most of China's people would be "moderately well-off") and harmonious society as outlined by the government.[11] It is apparent to key stakeholders that the healthcare sector in China will need to undergo drastic changes and transformation if the government's objectives are to be achieved. The Chinese government clearly understands the magnitude of the problem and has articulated its commitment to closing the significant gaps in the healthcare sector and has emphasized the need for public and private sector cooperation.[12]

"The gap between the need for healthcare services and the capabilities of current Chinese health insurance and delivery system is still immense… Development of the healthcare sector should depend on the government as well as the market…"

– Gao Qiang, Minister of Health[13]

There is no simple solution to closing the gap identified by the government. Challenging questions must be addressed to fundamentally improve healthcare in China:

- What changes need to occur in the short term to improve the situation while longer-term challenges are being addressed?
- What is the role of the government and other players across the healthcare ecosystem?
- What can service providers do to improve delivery of healthcare services?
- How can technology be leveraged to improve the management and delivery of healthcare?

The IBM Institute for Business Value in China recently completed a comprehensive study of China's healthcare industry to help answer these questions. We identified the sector's key challenges, their root causes and potential solutions to transform China's healthcare system. For instance, the use of technology – such as establishing a national health information network – and using innovative clinical solutions – such as electronic medical records – can help to improve effectiveness of health services in China. Drawing on the IBM experience in working with healthcare systems in developed and developing countries worldwide, we present a bold vision for the future that can serve as a platform for dialogue among key players across China's healthcare system.

Looking forward to 2010, we envision a healthcare system that provides equitable, affordable and high-quality patient care to China's citizens. Achieving this vision hinges upon – above all – government-led initiatives that will drive concerted change by players across the healthcare system. Many of these changes can begin today to prepare for the future environment and bring China one step closer to a *xiao kang*, harmonious society.

Fundamental challenges facing current healthcare system

Implementing health reform first requires a thorough and comprehensive view of the current issues with the healthcare sector today. Identifying problems can set the blueprint for changes to be made in the future. There are three main challenges:

- The lack of access to affordable healthcare
- Inefficient use of healthcare resources
- A lack of high-quality patient care.

Lack of access to affordable healthcare

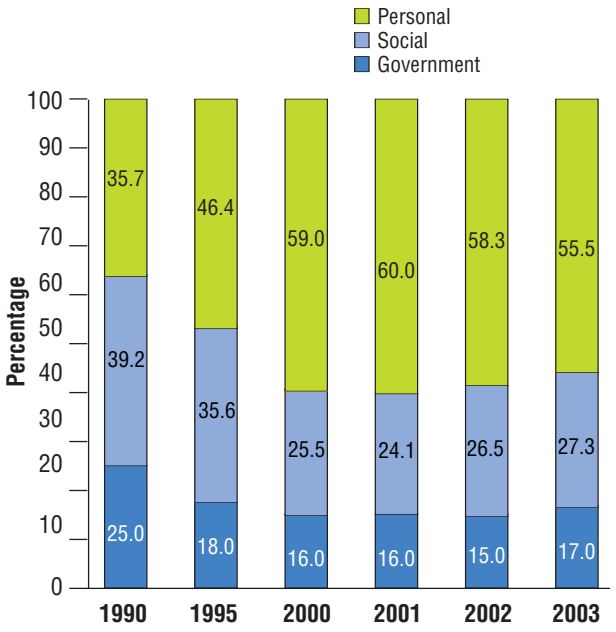
Simply put, a significant portion of China's urban and rural population is without access to affordable healthcare. Rural areas are particularly hard hit, with 39 percent of the rural population unable to afford professional medical treatment.[14] Furthermore, 30 percent of respondents in rural areas indicated that they have not been hospitalized despite having been told they need to be.[15] This grim situation is largely attributed to the abolishment of farming communes and rural health clinics that were replaced with private medical practices in the 1980s – without any alternatives established to date.

The situation is not much better for urban residents, with 36 percent of the population also finding medical treatment prohibitively expensive. Historically, the majority of urban workers received free healthcare coverage through employment by SOEs, the Chinese government or universities. However, in the face of fierce competition, many SOEs have gone out of business. Workers who lose their jobs also lose any insurance coverage and so far, there are no other mechanisms to resolve this issue.

Healthcare expenditures, along with actual government funding, have been increasing steadily over the past 20 years. However, as a percentage of GDP, government health funding has, in fact, been decreasing.[16] Even more problematic is the high percentage of the

population that is uninsured in China. In 2003, almost 45 percent of the urban population and 79 percent of the rural population had to pay for medical services out-of-pocket.[17] As illustrated in Figure 1, the percentage of out-of-pocket health expenditures has increased significantly since the 1990s.[18]

Figure 1. Healthcare expenditures by source of payment.



Source: Chinese Health Statistics Summary 2005.

In recent years, the government has made significant progress in increasing insurance coverage. For instance, the government has expanded coverage of the Urban Employee Basic Medical Insurance System (UBEMIS) to include non-state-owned sector and self-employed workers. In 2005, UEBMIS covered more than 129 million people.[19] The government has also re-established the Rural Cooperative Medical Scheme (RCMS) whereby the individual and government each contribute ten RMB (US$1.21) annually to a locally managed cooperative fund. By the end of 2004, RCMS included 69 million individuals and the government hopes to cover most of the country's rural households by 2010.[20] However, there are significant drawbacks to both programs, including limited risk pooling and poor fund management.[21,22]

Inefficient use of healthcare resources

The second key challenge is that current healthcare resources are often not allocated to and used effectively by the segments of the population that need them most. This imbalance is driven by inefficiencies in the supply and demand of healthcare services.

Supply of healthcare services

A disproportionate amount of China's healthcare resources have traditionally been concentrated on larger hospitals, particularly those in urban areas. More than 80 percent of health expenditures are allocated to urban areas even though 70 percent of the total population resides in rural areas.[23] This spending disparity is reflected in the number of hospital beds and healthcare personnel in rural and urban areas (see Figure 2) and is in line with the overall urban emphasis of China's social security system.[24]

Figure 2. Distribution of healthcare beds and personnel in urban and rural settings (per 1000 population)

	1980	1990	2000	2003
Number of beds				
Urban	4.47	4.18	3.49	3.67
Rural	1.48	1.55	1.50	1.50
Number of health professionals				
Urban	8.03	6.59	5.17	4.84
Rural	1.81	2.15	2.41	2.19

Source: China Statistical Yearbook, 2003; China Health Statistics Summary 2005.

Demand for healthcare services
The inefficiency in resource utilization is exacerbated by patients who are more likely to use larger hospitals in urban areas. For example, the average number of outpatients per doctor in Ministry of Health (MOH)-owned hospitals is 7.3; in the next largest, province-owned hospitals the average is 6.2; and it is 4.4 in the smallest, city-owned hospitals.[25] This is particularly problematic because larger hospitals are more expensive: average cost per outpatient in MOH hospitals is 234.8 RMB (US$28.36), as compared to 174.5 RMB (US$21.08) at province hospitals and 77.2RMB (US$9.32) at city hospitals at the county level.[26]

In summary, inefficiencies from both demand and supply perspectives have encouraged rapid expansion of larger hospitals, while not fully utilizing beds and healthcare personnel in smaller community hospitals and health centers. This has added to the financial costs of medical services and further increased the disparity between the development of the healthcare system in urban versus rural areas.

Lack of high-quality patient care

There is widespread acknowledgement among healthcare system stakeholders that the quality of patient care has been compromised in China. There are three key reasons contributing to the lack of high-quality patient care.

1. Loss of focus on patient care
Faced with financial pressures and without clear and strict government guidelines, many hospitals have lost the core competency of providing high-quality clinical care. A closer examination of the income sources of a hospital explains why there are economic incentives to over-prescribe drugs or diagnostic services without improving patient health. The typical hospital receives less than 10 percent of its income from the government, with large-scale, ministry hospitals receiving more funding. This means that hospitals have to generate the rest of their income from services and sales of drugs.

Over prescription and inappropriate prescription of expensive drugs is a widely acknowledged problem. Although the government has set recommended prices for each drug, there are no strict guidelines in terms of the types and number of drugs to be prescribed for each illness. As drugs account for a significant portion of a hospital's income, there is a tendency to condone the inappropriate prescription of drugs. In fact, almost 44 percent of a typical hospital's income is generated through sales of drugs alone.[27]

Inappropriate use of medical equipment can also be attributed to the competitive pressures faced by hospitals. Many hospitals invest in expensive, high-end medical equipment and advertise it extensively to attract new patients. The percentage of medical instruments in all Chinese hospitals has been increasing steadily and there is growing evidence that availability of such equipment has exceeded actual demand. For instance, 30.6 percent of all Chinese hospitals own Computerized Tomography (CT) machines,[28] already higher than in major European cities and the U.S. These and other unnecessary purchases divert resources from potentially more important investments, such as those to improve clinical care.

2. Quality of healthcare professionals
There have been significant improvements in raising the quality of healthcare personnel. However, quality has to be further enhanced to increase the level of patient care. Notably, there are challenges because no uniform definition exists to document the required qualifications of healthcare personnel. In addition, current training and experience of healthcare personnel is relatively weak. The inconsistent and low quality of healthcare workers is a particular issue in rural areas. A 2001 study of 46 counties and 781 village doctors in 9 Western provinces found that 70 percent of village doctors had no more than a high school education, and had received an average of only 20 months of medical training.[29] Not only are there fewer personnel in rural areas, it is very difficult to attract and retain skilled personnel to work in less developed regions of China.

3. Difficulty in monitoring level of care
Another factor contributing to the lack of high-quality patient care is the difficulty in monitoring the level of quality care within China's very complex healthcare system. Currently, there is a lack of integrated health policies that apply to all hospitals. The provision and regulation of health service delivery is largely decentralized and managed by a multitude of different stakeholders, including the Ministry of Health, provincial and city governments, military, and even large state enterprises that continue to operate their own hospitals. This decentralization not only creates great variation in terms of quality of care across the healthcare system, it also makes it difficult to consistently monitor the level of care.

Significant improvements must be made to solve these three major challenges to China's healthcare industry. In China today, there are major drivers of change that, if harnessed properly, can provide the government and other industry players a window of opportunity to address these challenges. In the next section, we will explore these major drivers of change.

Drivers of change

China's healthcare system is on the brink of major reform, stimulated by a multitude of forces that are driving change. The best way to analyze these drivers of change is by looking at the three key stakeholders in the healthcare sector: patients, government and service providers.

Patients: Changing needs

The typical patient profile is changing rapidly in China, both in terms of its demographic profile and the level of expectations today's patient now has for health services. An aging population, urbanization and increasingly knowledgeable patients are all factors driving changes in patient needs.

By 2020, 11.8 percent of China's population will be over the age of 65,[30] compared to 8.56 percent in 2004.[31] The aging population will place significant social and economic pressure on healthcare services. The elderly will create a higher demand for medical services, particularly for chronic illnesses – such as diabetes and senility – that tend to be costlier to manage. The question of how to pay for medical services for the elderly is indeed a key issue of concern. With implementation of the "one child" policy in 1979, there is currently no infrastructure to replace extended families and the existing pension schemes leave a large proportion of the labor force "uncovered." This means that both the individual and the government will have to increasingly bear the burden of elder healthcare coverage.

Another key change is the rapid urbanization of China at a rate of 1 percent every year, so it is expected that by 2020, 55 to 60 percent of China will be urbanized.[32] Urbanization will create pressures on the healthcare system in two major ways. First, there will be an epidemiologic transition, with an increase in noncommunicable diseases due to changes in diet and a more sedentary lifestyle. In 2003, noncommunicable diseases, such as stroke and heart disease, already accounted for 75 percent of all deaths in China.[33] This percentage will likely increase with urbanization.

The second impact of urbanization is the increased need for integrated medical insurance that covers individuals as they move from rural areas to cities. Because insurance coverage is currently managed locally and there are, in fact, two separate systems for rural and urban insurance, migrant populations today lose insurance coverage when they move to urban areas. This is a potentially serious issue that, if not addressed properly, can affect social stability.

Chinese patients are becoming more knowledgeable and are taking a more active role in "managing" their health. In major cities, there are increasing numbers of individuals who are taking "ownership" of their health, as demonstrated by rising demand for health supplements, vitamins and other health services such as laser eye surgeries. As patients become better informed, they, in turn, become more demanding about the type and quality of health service they expect to receive. The government has, in fact, already encouraged the "voice of the consumer" by soliciting patient feedback in evaluating hospitals to help improve the level of patient care.[34, 35]

Government: Strong commitment to improving health services

The government's commitment to address the current issues in the healthcare sector is apparent through candid acknowledgement. The government has already allocated more investment to improve public health and rural health services; placed emphasis on controlling healthcare costs; implemented initiatives to improve hospital management to raise quality of patient care; and developed plans to establish and build a national health infrastructure.

Investment in improving public health and rural health services

The SARS outbreak of 2003 raised the need for a better national disease prevention and surveillance system. The central government has allocated 2.9 billion RMB (US$350 million) to help every province, city and county set up its own disease control and prevention center.[36] Since 2002, the government has allocated most of its additional funding to rural areas. Some initiatives include allocating special funds to Central and Western China, and funding graduates of medical colleges to serve in rural hospitals for one or two years.[37]

Emphasis on controlling healthcare costs

The government has already implemented various initiatives with the goal of controlling costs to allow more affordable healthcare. In September 2004, a guideline was released restricting prescriptions for seven-day use only, and three days for emergencies.[38] The purpose is to control physicians' prescription activities to reduce unnecessary prescriptions of drugs. While this and other policies should greatly help to reduce costs, it is extremely challenging to enforce compliance to these national regulations, due to China's complex health system.

Raising quality of patient care within hospitals

2005 was set as the "Year of Hospital Management Reform," with the key theme of "Patients come first, improve the quality of the service." This is in line with the government's commitment to develop hospital management and organization. The focus areas included enhancing financial management, controlling costs, instituting appropriate supervisory roles and rebuilding the personnel system.[39]

Tianjin is an example of a local health bureau taking action to raise the quality of care. Instead of tying salary to factors such as number of patients served or the amount of drugs prescribed, the Health Bureau of Tianjin ties salaries to job performance, of which an important component is patient satisfaction.[40]

Creating national health infrastructure

The government has set clear, although ambitious, goals of improving the national healthcare infrastructure by 2010.[41] Some highlights of the plan include setting up five to eight pilot regional healthcare systems by the end of 2006, including digital services, integration with insurance, referral systems, electronic records, etc. Setting up an infrastructure that is in line

with healthcare development and reform is critical, as information flow among the various stakeholders in the healthcare system is required to support appropriate decision making and management of service delivery.

All the initiatives above outline the strong desire for change in the healthcare sector. Of the various drivers of change, the government will play a leading and coordinating role for improvements in healthcare service.

Service providers: Operating in a complex and uncertain environment

Hospitals today are operating in a very challenging environment. There is intense pressure to increase the efficiency and quality of patient care, not only from the government, but also from patients. The service provider market has become very complex, with varying ownership structures and many different operating models. It is also an uncertain time for hospitals because although the government has identified the overall direction for change, many hospitals are still awaiting clarity regarding specific policies and regulations.

Many hospitals are trying to thrive and grow in this environment, with different types of hospitals facing different challenges. As such, different hospitals have adopted different strategies to grow and in some cases, simply to survive (see Figure 3). Regardless of the type of hospital, a common theme is the need to improve the quality of care while lowering costs.

Figure 3. Challenges faced by and recommendations to hospitals.

	Health services provided	Current situation	Measures
Tertiary hospitals (Larger, Tier 3)	• Provide specialist services although typically provide wide range of health services	• Revenue/cash is not an issue • Goal to improve quality of care and hospital efficiency • Desire to become regional/ international center of excellence	• Emphasize reputation of doctors and hospitals • Expand through acquisition of smaller hospitals and/or adding new buildings/beds
Secondary hospitals (Often regional)	• Provide general health services • Treat mostly outpatients	• Revenue/cash flow major concern • Often lack of good medical infrastructure • Difficulty in attracting high quality personnel • Weak hospital management skills	• Collaborate with private clinics and community healthcare centers to gain wider access to patients • Form alliances with service providers (e.g. referral systems, joint procurement etc.)
Primary hospital (Often small community health centers)	• Provide community health services	• Major survival challenge as difficulty in attracting patients and generating required revenue to cover operating costs	• Focus on increasing patient flow • Improve quality of care • Lower patient costs
Special service hospitals	• Provide specialized treatments (e.g. cosmetic surgery)	• Revenue generated from personal expenditures • Target specific populations (e.g. foreigners, wealthy populations)	• Provide patient-centric service • Invest in cutting edge technology

Source: IBM Business Consulting Services and IBM Institute for Business Value analysis.

In summary, we have observed strong momentum for change in the healthcare sector, driven by patients, government and service providers. Together, these three key stakeholders are expected to drive positive change to realize significant improvements by 2010.

"The government will define provision of healthcare service as a publicly funded industry. … Government hospital and socially owned non-profit hospitals will become the main components of healthcare sector, in order to demonstrate the public service nature of the healthcare sector. For profit hospitals will play a supplemental role, and we will set different policies."

– Liu Xinming, MOH, Policy and Regulations Department, May 2005[42]

View of healthcare in China in 2010

What will China's healthcare system look like by 2010? What type of healthcare services will the average Chinese citizen be able to enjoy in 2010? The overarching focus for 2010 is to provide equitable, affordable, yet high-quality patient care. This vision can only be achieved through a series of changes initiated in parallel by key stakeholders across the healthcare system, with clear strategies and guidance set by the government.

The government will play a central role in improving access to and quality of healthcare

Segmentation of health services through unique policies and funding mechanisms

To formulate appropriate strategies and policies, we envision that the government will segment health services into three major categories: public health, "basic" medical services and special services. The government is expected to set different policies, use different funding mechanisms and allow different levels of competition for these three types of services (see Figure 4) to meet the needs of the vast majority of Chinese citizens.

Figure 4. Delivery and funding mechanisms for different healthcare services.

	Types of services	Likely delivery mechanism	Funding mechanism	Market open/closed
Public health services	• Control and prevention of infectious diseases: STD, AIDS, respiratory diseases, mental illness, reporting at regional levels, healthcare education	• Provided by public, non for profit health centers and hospitals (e.g. township)	• Government direct funding or through social insurance	• Closed market • Services provided by government
Basic health services	• Include typically required medical services for treatment and well being of population	• Largely provided by non profit hospitals	• Social insurance and company sponsored insurance programs	• Partially open • Market open to for-profit hospitals
Special health services	• Includes uncommon health services, leveraging special technology (e.g. cosmetic surgery etc.)	• Provided by specialized and for-profit hospitals • Based on free market principles	• Self-funded • Private health insurance	• Open to competition (local and foreign)

Source: IBM Institute for Business Value analysis.

Public health services – such as controlling and preventing infectious diseases, administering immunizations and treating mental illness – are expected to be funded by the government and provided by public, non-profit service providers, such as health centers and smaller hospitals.

At the same time, the government will likely define and pay for a "basic" medical services package that is intended to be affordable and available for all citizens. This package will need to be customized for China, as it currently varies greatly by country. However, it should, at a minimum, cover prenatal care, routine check-ups, emergency services and treatment of common diseases, such as diabetes. These basic health services will likely fall within the jurisdiction of non-profit and government-owned hospitals, with limited opening of the market to for-profit and foreign hospitals. To promote social equity, the government will likely provide funding for the poor and disadvantaged. The rest of the population will be covered through government and social insurance.

The government has announced plans to continue to increase the level of insurance coverage in both urban and rural areas. The goal is to cover the vast majority of individuals living in rural areas through expansion of RCMS. While the specific funding mechanism needs to be determined, comprehensive insurance coverage does not necessarily mean unrealistic government investment.[43] In urban areas, for example, the government will encourage companies to offer more comprehensive coverage for employees. With the rate of urbanization and the need for consistency across China, the government will also likely need to develop a mechanism for integrating rural and urban insurance in the future.

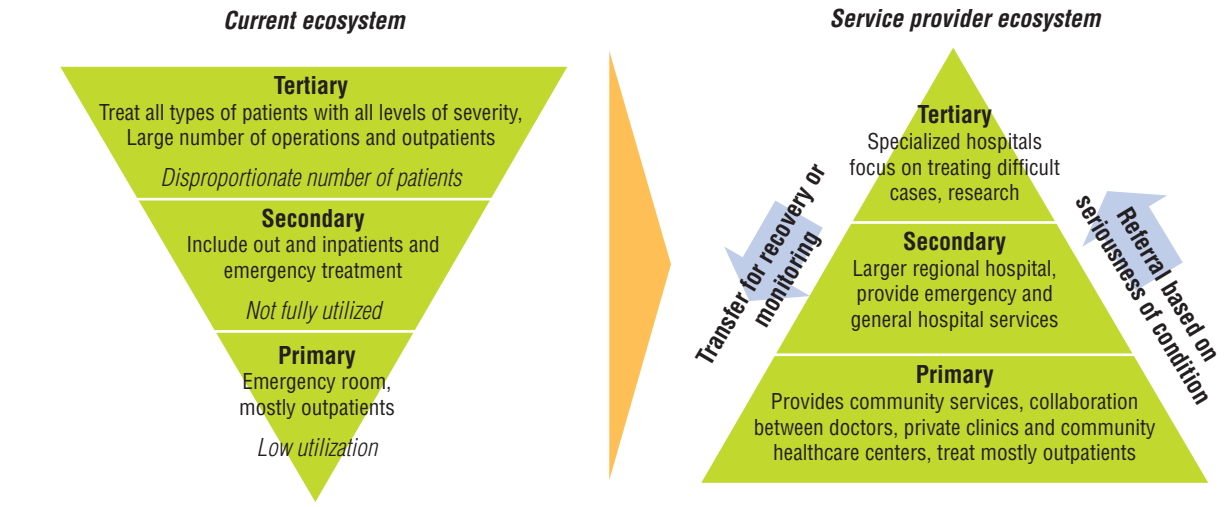
The government also wants to encourage the growth of private medical insurance to complement coverage of basic medical services. It already recognizes that the sustained development of the Chinese healthcare insurance market will require closer cooperation among various ministries. The government is also encouraging private insurance companies to develop more innovative products, new operational models and new business management techniques to fully position commercial health insurance to play an important role in the Chinese health economy.[44]

The growth of the private medical insurance sector will further fuel the growth of special health services, such as laser eye surgery and wellness management. It seems likely that the government will allow this special health services market to be open to competition from both local and foreign service providers.

Establishment of "service provider ecosystem"
Today's hospital system is highly inefficient, with both resources and patients concentrated in larger hospitals. This has resulted in a situation where large hospitals are growing rapidly and provide general, as well as specialist services. Meanwhile, smaller community hospitals and health centers are caught in a vicious cycle where the lack of patients and income make it difficult for these service providers to upgrade their medical infrastructure, which, in turn, further reduces their attractiveness to patients.

Figure 5 illustrates how the current three-tier system can be "inverted" by creating a service provider ecosystem. The key concept is to distribute patients across the hospitals, according to the level of services needed. For instance, patients should visit primary or community hospitals for minor ailments. They should be referred "up" to secondary and tertiary hospitals depending on the seriousness of their conditions. Tertiary hospitals will focus on treating difficult cases. As patients recover and require only monitoring health services, they are referred "down" to recuperate or receive rehabilitative services in community settings.

Figure 5. A "service provider ecosystem" to resolve inefficiencies in the current system.



Source: IBM Institute for Business Value analysis.

The new ecosystem on the right side of Figure 5 is designed to distribute resources and patients more effectively across the current hospital structure while reducing overall medical costs. In this new service provider ecosystem, all available resources should be integrated together (that is, the referral system should not be limited to MOH hospitals, but should also include military hospitals and SOE hospitals to more efficiently utilize all available resources). Setting up such a referral system will require establishing not only appropriate policies and regulations, but also supporting infrastructure.

Health reform will be greatly accelerated by the changing relationships among service providers, patients and payers

As the government increases insurance coverage and private medical insurance expands, the emergence of third-party payers will become increasingly important and are expected to have a positive effect on the healthcare system.

The presence of third-party payers introduces a market-driven, check-and-balance capability into the overall healthcare system. Third-party payers will choose hospitals in a rational manner that rewards efficient service providers, controls overall healthcare costs and simplifies reimbursements – naturally encouraging the positive development and improvement of service providers. Thus, in the future, service providers will no longer be competing for largely uninformed, individual patients, but instead for large commercial contracts from sophisticated third-party payers.

Hospitals need to develop new skills and competencies

The future environment brings new challenges for service providers that will need to participate in a healthcare ecosystem that rewards those that provide cost-effective, high-quality healthcare and, in effect, penalizes those that do not.

Hospitals will need to demonstrate greater accountability and transparency of their operating costs and clinical outcomes. The pressure to provide higher-quality, cost-effective care means that hospitals will need to introduce responsible governance mechanisms, such as a Board of Directors model. Hospitals will also need to develop capable management teams, and use management methods that are aligned with government, third-party payer and patient demands for high-quality clinical care.

Peking Union and Peking University No. 6 Hospitals: Improving care and collaboration

Peking Union Hospital is a service provider that has already implemented various measures to increase the quality of clinical care. It has formed subcommittees for initiatives such as appraising qualifications of all medical workers and defining clinical pathways for diseases, including defining clinical protocols and appropriate drug treatments. This and other initiatives have reduced the length of time patients are hospitalized and the costs for treatment.[45]

Other important skills are to develop and manage relationships, and collaborate with other hospitals, including developing the infrastructure to share information. As an example, Peking University No. 6 hospital, a leading mental health hospital in China, currently has 280 beds and treats more than 500 outpatients daily. Its expansion plan, however, is not to add new beds and buildings, but to collaborate with community hospitals and social agencies. The concept is that patients can work and live in community settings while Peking University No. 6 doctors rotate through different communities to provide regular checkups and patient monitoring.[46]

In our view of the healthcare system in 2010, we envision the different stakeholders working together to drive higher levels of quality care, with the government enabling affordable and equitable services. This implies that the government and service providers need to take action today to prepare for the future environment.

Preparing for 2010: Implications for stakeholders in the healthcare sector

There are many challenges that must be overcome to achieve this vision for healthcare in 2010, and we believe that it is only achievable with concerted efforts by key stakeholders across the healthcare ecosystem. The essence of health reform in China is to develop more effective ways to deliver high-quality, affordable healthcare to a greater number of citizens.

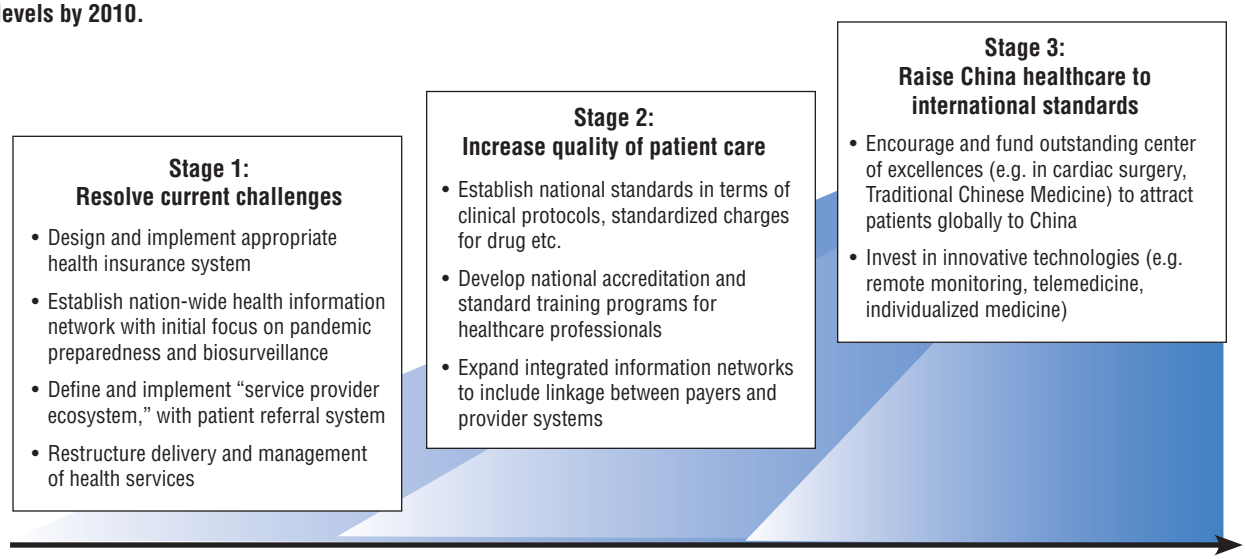
While the government will likely increase the amount of healthcare funding as a percentage of GDP, it is unrealistic to expect significant increases in government spending given the many priorities of a fast-developing nation such as China. Instead, the government must develop innovative ways to leverage current funding and resource levels. Hospitals will need to adopt new management styles and ways to deliver healthcare services.

Action must be taken today in order to achieve the goal of providing affordable and high-quality patient care. We outline below the major activities the government and service providers should embark upon.

Actions for government

Figure 6 outlines the three-stage approach that we envision the government can take to help bring China's healthcare system to international levels by 2010. We believe the near-term focus, as outlined in Stage 1, is to first resolve the major challenges in the healthcare system.

Figure 6. Recommended three-stage approach for the government to help bring China's healthcare system to international levels by 2010.



Source: IBM Institute for Business Value analysis.

Design and implement "universal" health insurance system

One of the major initiatives is to design and implement a health insurance system that meets the needs of the Chinese population, yet is affordable. This is no easy task – the government has to consider a multitude of factors, such as how to:

- Raise the funds for medical care
- Distribute this financial burden fairly
- Appropriately limit the scope of services
- Obtain high-quality, consistent results.

Based upon its stage of development, culture and government priorities, China should evaluate a mixed public/private model with the design criteria outlined in Figure 7. Such a model will support insurance choices, social stability and economic development, while limiting government expenses.

Establish nationwide health network

Another action that the government can embark on now is to facilitate information sharing by building a common platform linking service providers in a nationwide health network. A key theme of the effective healthcare system of the future is sharing information and integrating across the health system.

A reliable, security-rich, nationwide network can form the backbone of a national health information infrastructure and facilitate information sharing among patients, service providers, regulatory agencies, health professionals, government and payers. This can allow automated quality and compliance reporting, and also create lower-cost capabilities for collecting, aggregating, analyzing and reporting clinical information in near realtime.

The network can be leveraged for multiple purposes, such as public health services, tracking of long-term health problems, and better analysis and understanding of the medical costs of diseases. Given the emergence

Figure 7. Recommended mixed public/private health insurance model.

Design criteria	China's current situation	Recommended model	Risks/issues
Eligibility	Largely limited in practical terms to urban employed	All citizens, irrespective of employment status	Services provided to non-contributors
Universality	Multiple public and (few) private insurance programs	Private insurance with minimum benefits and social safety net	Inequities in access to care based on income levels
Administration	Multiple regional and federal agencies	Government-regulated private health insurers and third party administrators	Lack of transparency due to private administration
Channeling of funding	Income tax, employee and employer contributions	Income tax only, based on total income (not only salary)	Tax collection and management from individuals
Contracting	Managed by government agencies (very limited third party administration)	Government sets minimum benefit levels and private insurers contract with providers	Capabilities of private institutions to contract effectively

Source: IBM Business Consulting Services analysis.

of increasingly serious infectious diseases, we believe the initial focus of this network should be on developing a network for pandemic preparedness and bio-surveillance to enable rapid detection and response to adverse healthcare events. We recognize the challenges in terms of the lack of standards, and the difficulty in gathering and sharing information among service providers. The health network can start with capturing basic demographic and health status information about citizens, and gradually expand its usage in the future.

Restructure delivery and management of health services
In addition to implementing an integrated referral network of service providers in the future, the government can consider whether to restructure the management and delivery of healthcare services. Take the example of how Hong Kong steadily improved the quality and efficiency of healthcare by separating hospital management from policy development.

Hospital Authority: Implementing structural reform in healthcare

Hong Kong's Hospital Authority (HA) was established as a quasi-government statutory body to manage all public hospitals in Hong Kong. HA is independent from the government, but still accountable to the Secretary for Health and Welfare, who is responsible for the formulation of health policies and monitoring the performance of the Authority. HA has initiated many managerial and structural reforms in the organization of public hospitals as a conscious move away from the formerly bureaucratic structure toward a more transparent and service-oriented management culture. As a result of these changes, patients in Hong Kong have become more satisfied with the technical quality of care and the attitudes of personnel in health facilities.[47]

China might consider emulating such a model to separate management and delivery of health services. The Ministry of Health can play a key role in setting policies and regulating hospitals to increase the quality of patient care.

Actions for service providers

To excel in the future environment, hospitals can consider implementing various initiatives in three phases (see Figure 8).

Figure 8. IBM recommendations for hospitals to thrive in the future healthcare environment.

Source: IBM Institute for Business Value analysis.

Phase 1: Fix the foundation

During this phase, hospitals should resolve major internal operational and efficiency issues. Some initiatives include:

- Enhance hospital management skill sets and implement a Board of Directors governance model
- Define and utilize clinical protocols and standards of care
- Optimize business processes, especially regarding claims processing for government reimbursement, procurement processes to reduce costs, and budgeting/accounting/financial reporting for better financial control and management
- Optimize internal IT environment to achieve more efficient clinical and business processes.

Phase 2: Prepare for growth

Hospitals need to develop new competencies required for sustained growth. We believe the key focus should be to:

- Determine key areas and services to be expanded, based on robust evaluation of factors such as medical expertise, and the demand for and profitability of various services.
- Build skills in managing collaboration with other healthcare partners, such as patient referral and joint procurement, and effectively manage collaboration programs.
- Develop and establish information networks required to share information with external stakeholders such as other hospitals, payers (for example, Ministry of Labor and Social Security, commercial healthcare insurance) and regional/national health networks.
- Optimize their IT infrastructure to enhance clinical productivity and to support connectivity, patient compliance and advanced medicine, particularly as hospitals grow by adding new beds and/or buildings.

Phase 3: Achieve excellence in patient care

In the last phase, service providers can move toward excellence in patient care. It is important to remember that providing excellent patient care does not necessarily translate into higher costs, or require the use of advanced technology. Achieving excellence should be a mindset.

"You can provide high-end and concierge services, but that might not affect overall service quality. Core change and an overall patient focus are needed to improve care and improve hospital wide service quality."

– Roberta Lipson, CEO of Chindex International [48]

The emphasis should be to:

- Continually improve the level of clinical care by strengthening training and supervision of clinical care provided by healthcare professionals.
- Focus on patient needs by enhancing the care environment and services to improve the physical and emotional well-being of patients and families.
- Build strength and expertise in certain departments and areas that could be shared with hospitals not only within China, but also internationally, through initiatives such as training and research programs.
- Implement technology to increase productivity and efficiency in patient care.

Conclusion

The healthcare sector in China will be facing major changes in the next four years. While there will undoubtedly be challenging times ahead, we believe that the key stakeholders can make a concerted effort to drive forward positive changes. The vision of having every Chinese citizen enjoy affordable, high-quality healthcare is achievable; however, action must be taken today. In this way, China can build a healthcare system that is on par with international standards and in line with its phenomenal economic growth to support its goal of achieving a "harmonious society."

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