A REPORT OF THE CSIS
GLOBAL HEALTH POLICY CENTER

Key Issues in China's Health Care Reform

PAYMENT SYSTEM REFORM AND HEALTH TECHNOLOGY ASSESSMENT

Rapporteurs
Xiaoqing Lu Boynton
Olivia Ma
Molly Claire Schmalzbach

December 2012

50 YEARS | CHARTING OUR FUTURE

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EXECUTIVE SUMMARY

In 2009, the People's Republic of China announced an ambitious plan to reform its health care system. Between 2009 and 2011, China invested $124 billion in its health care sector and achieved universal health coverage for its citizens. However, the level of actual benefits remains low, along with a visible discrepancy in quality and quantity of health care between urban and rural residents.

In 2012, the Center for Strategic and International Studies (CSIS) Global Health Policy Center, based in Washington, D.C., and the China National Health Development Research Center (CNHDRC), based in Beijing, cohosted two seminars to discuss the potential role for diagnosis-related groups and health technology assessment in China's health system and key lessons learned from U.S. and global experiences.

- *Diagnosis related groups (DRG)*. DRG is a patient classification system, which averages costs and payments for treating similar types of patients.
- *Health technology assessment (HTA)*. HTA is the systematic evaluation of properties, effects, or other impacts of health care technology.

At the conclusion of the DRG conference, there was a consensus around the need for China to build an appropriate incentive structure into the hospital payment system. Setting the right drug prices and consistent incentives are critical steps in establishing effective DRGs in China. At the end of the HTA session, experts recommended that China embrace a diversified system that applies HTA locally to address the gap between urban and rural areas. The development of a network of HTA institutions across the country would also enhance Chinese capacity to advance the utilization of HTA.

1 PAYMENT SYSTEM REFORM IN CHINA'S HEALTH CARE REFORM

A RAPPORTEUR'S REPORT OF THE JUNE 25, 2012, CSIS-CNHDRC SEMINAR

Prepared by Xiaoqing Lu Boynton and Olivia Ma

Introduction

On June 25, 2012, the Center for Strategic and International Studies (CSIS), in partnership with the China National Health Development Research Center (CNHDRC), brought together a select group of top U.S. and Chinese experts on hospital payment systems to discuss the role of diagnosis related groups (DRGs) in China's ongoing health care reform and key lessons from the experience in the United States. CSIS also hosted a dinner discussion focusing on the health reform trend in emerging economies including China. The seminar on DRGs was the first round of exchanges CSIS had with CNHDRC in 2012 on a series of specific issues that are key to China's health care reform. In September 2012, CSIS and CNHDRC will conduct a second seminar in Beijing on health technology assessment.

This rapporteur's report intends to summarize key findings of the Chinese and U.S. presentations, as well as lessons learned from the U.S. experience and some recommendations for China that were generated from the discussion.

Updates on China's Health Care Reform

Since announcing an ambitious health care reform in 2009, China has made big and bold strides in providing its people with equitable, accessible, and affordable health care over the past three years. With Beijing's investment in the health care sector totaling $124 billion between 2009 and 2011, the highest government investment in health care in China's history, there have been some appreciable achievements. The inpatient reimbursement rate increased by almost 10 percent annually from 2008 to 2010, and the price of basic medicine dropped by an average of 17 percent each year during the

2009–2011 period.[1] Most notably, 95 percent of the nation's population is now covered by medical insurance.[2]

The 12th Five-Year Plan has set the path for the second phase of reform. By the end of 2015, the government plans to increase its budget for total health expenditures to 33 percent, compared to 28 percent at present; to reduce individuals' out-of-pocket expenses to 30 percent, compared to 35.5 percent at present; and to train 150,000 general practitioners to ensure primary care provision in urban areas. In order to cope with a colossal and aging population in urgent need of accessible and affordable health care, China's Ministry of Health (MOH) designed a framework that covers a number of key reform areas, including information system, pricing and payment structure, drug quality supervision, primary care, and public hospital reform. Among these components, public hospital reform has been identified as one of the top 10 priorities in 2011.[3] The Chinese public generally has a low level of trust in local and community clinics. As a result, public hospitals deliver 90 percent of inpatient and outpatient services in China, which account for 2.9 percent of Chinese gross domestic product (GDP). Hence, the reform of public hospitals has become an essential part of the government's efforts to overhaul its health system. While the first stage of China's health care reform, between 2009 and 2011, focused on expanding health care coverage, the Chinese leadership has called for deepening medical reform by strengthening the national health care network, improving the essential drug system, and promoting the reform of public hospitals.[4]

As the reform enters a new crucial stage, the MOH has focused on the core issue of public hospital reform—reform of the provider payment system. Chinese public hospitals have had the notorious reputation of underpaying their physicians and medical staff, which has led them to rely on "kickback" payments through overprescribing drugs and medical procedures to patients. Chinese policymakers are committed to addressing the serious problem of "feeding hospitals by selling drugs (*yi yao yang yi*)" by building a new pricing and payment scheme to accurately reflect the value of the medical workers and their services.

Overprescription of drugs and imaging procedures has led to soaring medical expenses for Chinese patients. The health care reform, introduced in 2009, aims to fundamentally address the problem of "seeking medical care is difficult and expensive (*kan bing nan, kan bing gui*)," a phenomenon that has become prevalent in Chinese society. The reform of the provider payment system is a means to achieve the end goal of expanding access to affordable health care by unifying the way the

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[1] "Chinese vice-premier stresses health care reform," *BBC Monitoring Asia Pacific—Political*, November 30, 2011; and Qun Meng et al., "Trends in access to health services and financial protection in China between 2003 and 2011: a cross-sectional study," *The Lancet* 379, issue 9818: 805–814.

[2] "China's medical reform covers over 95% Chinese population," CCTV, June 25, 2012, http://english.cntv.cn/program/newsupdate/20120625/113158.shtml.

[3] KPMG, "China's 12th Five-Year Plan: Healthcare sector," May 2011, http://www.kpmg.com/CN/en/IssuesAndInsights/ArticlesPublications/Documents/China-12th-Five-Year-Plan-Healthcare-201105-3.pdf.

[4] "Chinese vice premier calls for deepening medical reform," Xinhua, July 20, 2012, http://english.peopledaily.com.cn/90785/7881934.html.

government reimburses hospitals and improving resource allocation in public hospitals. Payment system reform is also expected to help contain health costs, an issue China will soon need to consider in order to ensure the long-term sustainability of the nationwide health reform.

DRGs and China's Health Care Reform

Definition of DRGs and Implementation in Different Countries

China has adopted a multiphase reform strategy to develop the current payment system into a DRG system. DRG is a patient classification system, which averages costs and payments for treating similar types of patients. It was invented in the United States in the 1980s and was quickly adopted in many other countries, including Australia, Germany, the United Kingdom, France, the Netherlands, and South Korea. To date, over 40 different countries have adopted their own versions of DRG systems, with different rationales, institutional setups, and methodologies.[5]

When Medicare was established in 1965 in the United States, hospitals were compensated based on the actual treatment costs of Medicare beneficiaries, leading health care providers to overprescribe drugs and services, resulting in a dramatic increase in Medicare expenditures. In response to the rapid growth in health care costs, the U.S. Congress adopted a prospective payment system (PPS) with DRGs in 1982 to contain costs and improve efficiency in the system. As a key part of PPS, medical and surgical services are divided into relatively homogeneous categories, known as DRGs. Within each DRG, Medicare sets a flat rate for what a hospital should spend on treating one patient and reimburses hospitals uniformly at the predetermined rate. As a result, hospitals are rewarded for efficiency, as they pocket every dollar saved from treating a patient. At the same time, inefficient hospitals have an incentive to become more efficient, as they have to be responsible for any amount spent beyond the DRG rate. However, Medicare DRG (MS-DRG) is only one of the many DRG systems implemented in the United States. Other DRGs, for instance, include the Refined DRGs (R-DRG), All Patient DRGs (AP-DRG), and Severity DRGs (S-DRG).

A good DRG system is built with the support of quality data, periodical updates, and strong institutions. In the United States, Medicare DRG rates are first determined at the federal level and then adjusted at the state or local level by indices such as wages, living costs, and the number of outlier patients. Three key organizations are involved in the MS-DRG system, including the Centers for Medicare and Medicaid Services (CMS), the Department of Health and Human Services (HHS), and the Medicare Payment Advisory Commission (MedPAC). The system is updated annually, not only in terms of coding, which is the way the system categorizes diseases, but also in terms of the above-mentioned adjustment indices, all of which require quality data and the collaboration of institutions at different levels.

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[5] Gerard Anderson, "Installing DRG Based Payment Systems in China: Ongoing and New Challenges," PowerPoint presentation prepared for the CSIS-CNHDRC seminar, Beijing, June 25, 2012.

Australia introduced the DRGs in 1988 and established an institution to plan and manage the research and reform of DRGs, called the Australian Casemix Clinical Committee (ACCC). With financial support of AU$9.3 million from the Australian federal government, AN-DRGv1.0 was developed in 1991 with 527 DRGs. With advances in grouping and calculation, AN-DRG has developed into different versions with increasing complexity and refined groups.[6]

The German DRG (G-DRG) was introduced on a voluntary basis in 2003 and became mandatory at the beginning of 2004. G-DRG was built on the Australian Refined Diagnosis Related Group version 4.1 (AR-DRG 4.1) and evolved throughout the years. The G-DRG is characterized by its budget neutrality. It aims to accurately reimburse hospitals for all services rather than to incentivize or disincentivize hospital activities. The system is maintained by the Institute for the Hospital Remuneration System (InEK). InEK not only updates codes and reimbursement rates, but also handles the applications for new diagnostic and therapeutic methods.[7]

In South Korea, the DRG pilot project was introduced in 1997 and was officially adopted in 2003. Even though the Korean government has actively promoted DRG, the current system is subject to a limited number of providers and patients with a relatively small scope. Two factors have affected the implementation of DRG in Korea. First, medical providers and scholars have been keen on the country's long-standing fee-for-service (FFS) system and thus resisted the DRG reform.[8] Second, participation in the pilot project was made voluntary rather than compulsory, which failed to include the participants the program meant to target.[9]

Japan adopted the Diagnosis Procedure Combination (DPC) system in 2003. This is a "per day" payment system, which is similar to, yet different from, the "per case" DRG system. Under a standard DRG system, a patient is reimbursed on a "per case" basis regardless of the person's length of stay, whereas under the DPC system, a patient is reimbursed on a "per day" basis, and the per day payment declines as the person stays longer in hospital. Unlike the United States where DRG was introduced to contain health care expenditures, the DPC aims to standardize clinical data and improve the transparency of hospital activities.[10] After several years of implementation, problems

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[6] Yan Wang, "DRG and Related Research and Progress," April 2012, http://www.studa.net/yixue/120426/09135742.html.

[7] International Society for Pharmacoeconomics and Outcomes Research (ISPOR), "Germany—Medical Devices," April 2011, http://www.ispor.org/htaroadmaps/germanymd.asp.

[8] Byongho Tchoe, "Diagnosis-Related Group-based Payment System and its Reform Plan in Korea," *Japanese Journal of Health Economics and Policy* 21, E1: 213–226.

[9] Bong-min Yang, "Reform in Provider Payment: DRG Experience in South Korea," PowerPoint presentation at World Bank HCF Conference, February 2008, http://bit.ly/Mk9iCh.

[10] Kiyoshi Nishioka, "Diagnosis Procedure Combination as a tool for health reform in Japan," keynote address at PCSI Conference, Fukuoka, November 11–14, 2009, http://www.congre.co.jp/pcsi2009/html/keynote/img/kiyoshi_nishioka.pdf.

such as up-coding and prolonged length of stay surfaced. The DPC committee under the Japan Ministry of Health, Labor, and Welfare has since conducted a major revision of the system in 2010.[11]

Key Obstacles in Implementing DRGs in China

Seminar participants identified several challenges for developing a DRG system in China and agreed that there were no easy solutions to the problems that China faces. There is also a significant lack of data on the costs of medical care in China. As of 2009, there were 916,600 health facilities in China, including over 20,000 hospitals.[12] Chinese hospitals in different geographic regions with different bed sizes have very different mixes of patients and treatment patterns. A diverse, large sample of hospitals throughout the country is essential to create DRGs. Clinical and cost data for a broad spectrum of services need to be collected to set the pricing, which needs to reflect as closely as possible the true, actual costs. In the 1980s when the United States started the DRG establishment process, there were 20 years of Medicare cost reports available for analysis, which indicated what types of cases hospitals were treating. As Medicare represents 40 percent of expenditures in the U.S. health care system, these reports were extremely important in establishing DRGs. China is missing the necessary data and needs to overcome this as the first step in the process of creating a DRG system. Trying to develop rates based on a small number of hospitals will not represent the diversity of patients, costs, and care that exists in China. Nevertheless, the large number of hospitals and different types of treatment patterns pose significant obstacles to collecting such data. Also, managers in the 20,000 Chinese hospitals need to be properly trained to understand the risks of DRGs in order to effectively implement a DRG system. This massive number implies that the DRG education process needs to start as early as possible.

The income gap between rural and urban areas reached its highest point in 2009 since China launched its reform and opening-up policy and has continued to expand.[13] This disparity implies varying degrees of care patterns and quality throughout the country. At present, China addresses the urban-rural gap through its 3+1 scheme for basic medical care: the Urban Employee Basic Medical Insurance Program, the New Cooperative Rural Medical Scheme (NCRMS), the Urban Resident Basic Medical Insurance (URBMI), and the urban and rural medical assistance system (which is similar to the U.S. Medicaid program). In the U.S. DRG system, all hospitals get the same payment rate with some adjustment for costs of living in the area. Due to the widely varying costs of living and needs for care in different areas, along with the complexity of different insurance schemes for rural and urban populations, creating accurate DRGs in China is extremely challenging.

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[11] Kazuhiro Takei and Hirokazu Ito, "Initiatives in Prospective Payment Systems Based on Diagnosis Procedure Combination," *Fujitsu Scientific and Technical Journal* 47, no. 1 (January 2011): 75–82, http://www.fujitsu.com/downloads/MAG/vol47-1/paper06.pdf.

[12] Ministry of Health, *China's Health Statistics Yearbook 2010* (Beijing: Peking Union Medical College Press, 2010).

[13] "Urban-rural income gap widest since reform," *China Daily*, March 2, 2010, http://www.chinadaily.com.cn/china/2010-03/02/content_9521611.htm.

At present, practicing physicians in China are severely underpaid. They have become reliant on prescribing expensive drugs and imaging services, as well as getting side payments from patients, to make extra income. Public hospitals, which receive inadequate funding from the government, are also struggling to cover costs by selling pharmaceuticals for revenues.[14] According to statistics from the China National Health Development and Research Center, drugs and health consumable materials are the largest beneficiaries of hospital reimbursement. Between 1998 and 2008, hospital profits from selling pharmaceuticals continued to rise, reaching RMB 57 billion in 2008.[15] Profits from drug sales have driven doctors to overprescribe, which has resulted in soaring out-of-pocket medical expenses for Chinese patients. Access to affordable health care has become the most pressing challenge within China's health system. To address this, all services must be included in the DRG rate. The DRG payment needs to cover all costs, including adequate compensation for physicians and nurses, in order to reduce incentives for side payments and for dispensing drugs and devices. Otherwise, hospitals will find ways to charge patients for services not covered by the DRG payment.[16]

China also faces a governance challenge. In the United States, the Centers for Medicare and Medicaid Services establishes a set payment for treating a case or providing a service meant to cover all the costs of providing that service.[17] There are also a number of think tanks, universities, and hospital associations that offer feedback on problems within the DRG system. The lack of a functioning regulatory apparatus in China creates concerns over China's capacity to monitor unexpected hospital behaviors with a DRG system in place.

Current Chinese Thinking on Provider Payment Reform

Public hospitals make up the majority of hospitals in China. The reform of public hospitals has been placed at the center of the current stage of health reform. Chinese public hospitals face many challenges, including the lack of government financial subsidies and low rates for medical procedures and labor, which are hard to redress to reasonable levels. The upside-down incentive system has resulted in health institutions' overdependence on revenues from selling medicines and consumable materials. The Chinese leadership has committed to solving the problems in the public hospitals through reform of the provider payment system. Nevertheless, given the gaps between rural and urban areas, as well as differences among various hospitals, the Chinese delegation acknowledged that China's payment system reform should be a gradual process with different reform phases, which would start with standardizing the fee-for-service system, moving to a simple case-based payment

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[14] "China calls for health system overhaul," *Wall Street Journal*, July 25, 2012, http://online.wsj.com/article/SB10000872396390443295404577546873955706232.html.

[15] CNHDRC statistics.

[16] Anderson, "Installing DRG Based Payment Systems in China."

[17] Medicare Payment Advisory Commission (MedPAC), *Report to the Congress: Medicare Payment Policy* (Washington, D.C.: MedPAC, March 2003), p. 178, http://www.medpac.gov/documents/Mar03_Entire_report.pdf.

system, then to a complex case-based payment system, and eventually graduating to a DRG system. The first phase of the reform would be implemented in large hospitals in urban areas.

Prior to 2001, China did not have a national standard on the prices of medical services. The predominant payment method in China has been FFS, which could improve the efficiency of the health system but also tends to induce abusive services delivered by hospitals. In 2001, the first edition of the *National Fee Schedule of Medical Services* was commissioned and jointly issued by the MOH, the National Development and Reform Commission (NDRC), and the State Administration of Traditional Chinese Medicine (SATCM).[18] The first edition included 3,966 procedures and services. In the 2007 revision of the *National Fee Schedule of Medical Services*, 207 new procedures were added and 144 procedures were modified.[19] In May 2011, the latest edition of the *National Fee Schedule of Medical Services* was released and is intended to be the national standard of pricing in the near term. Compared to the 2001 edition, the latest edition expands the fee category from 6 to 11 in order to reflect the efforts of medical personnel and technical risks in a reasonable way. The more appropriate pricing structure is also expected to provide a foundation for further reform efforts, such as a medical services bundle.

The goal of China's provider payment reform is to make adjustments to the current system in order to ensure costs are covered and to reduce costs on the part of selling medicines and consumable materials. Hence, the main feature of provider payment reform is to clearly define the clinical conditions of a single DRG or a single group of diseases and to set the parameters and types of care and conditions under which the patient should be rehospitalized. With a better standardization of care and treatment, the reform will also improve the quality of care, which is the ultimate goal of China's ongoing health reform.

With its impact on pricing standardization and quality of care, DRG is an irreversible trend for China. The Chinese participants stressed that the DRGs are not an end goal of the reform, but a means to accomplish the fundamental objectives of improving health care accessibility and clinical quality, as well as ensuring patient safety. It is also important to note that China will need to develop its own DRG grouping system due to its own disease spectrum and treatment procedures, including traditional Chinese medicine (TCM), as well as proprietary services such as focused ultrasound therapy. Piecing together data and programs entirely from other countries will not reflect China's unique needs and requirements.

National top-level design research on DRGs started in 2007, when a core research team was organized by CNHDRC, consisting of core clinicians and administrative managers. The research team is at the first stage of the design process, focusing on classification, dividing into different DRG groupings, gathering data, and weighing costs. China has also launched a pilot project in the Beijing region, where DRGs are used to pay providers. In other regions, China is currently simulating how

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[18] Qin Jiang, "Reform and Development of the Provider Payment System in China," PowerPoint presentation prepared for the CSIS-CNHDRC seminar, Beijing, June 25, 2012.
[19] Ibid.

much hospitals would be paid if they were paid under a DRG system. The Chinese participants emphasized the need for better data on costs and technical support in the design phase.

Key Lessons for China

The seminar focused on coming up with key recommendations for China to establish the DRGs. The most important lesson underpinning the success of the country's transition to a DRG-based payment system is that China should come to realize the importance of building appropriate incentives in the payment system and should immediately build an evaluation system in the ongoing and future pilot projects to examine and monitor hospital behaviors in response to incentives.

The daunting escalation of U.S. health care expenditures is rooted in a poorly designed incentive structure. Two potent forces have impeded cost containment efforts in the U.S. health system. On the one hand, government-sponsored Medicare and Medicaid programs reimburse hospitals, on average, 36 percent more than private insurance does. This huge gap has incentivized hospitals to enroll patients who are eligible for government-sponsored health care programs and has thus added to the government's burden. On the other hand, the health care industry constitutes as much as 20 percent of the U.S. economy and coexists with a fragmented payment system where hospitals gain significant pricing power. This implies that cost containment in the health sector runs the risk of hampering the already sluggish economic recovery.

While cost containment is not a primary concern for China at the moment, it is expected to become the government's focus in the near to medium term when the quality of care is improved. The U.S. experience has conveyed two lessons for China. First, the incentive structure should be carefully designed. Second, hospital behaviors prompted by inappropriate incentives might be irreversible and thus could have detrimental consequences to the development of the country's health sector, or even the economy as a whole.

The experience of Taiwan also sheds light on the significance of building an appropriate incentive structure. Before Taiwan initiated its structural health reform in the 1980s, doctors would spend merely 30 seconds with each patient, and each doctor could treat as many as 100 to 200 patients within half a day. Once Taiwan's National Health Insurance (NHI) system was in place, the rate of reimbursement was set to decline after the 100th patient of the day, which encouraged doctors to spend more time treating each patient, and the quality of care improved concomitantly.

Other observations included that hospitals have responded instantaneously to changes in incentives and that each hospital has behaved differently. A few discussants raised the issue that pilot projects do not predict exact hospital behaviors when a full system is implemented in reality. Despite the gap between demonstration and reality, China should closely monitor pilot hospitals and craft a general picture of how they react to different incentives. Chinese hospitals are extraordinarily good at following incentives and especially sensitive to pharmaceutical price changes, given that these hospitals rely heavily on drug sales. This feature implies that drug prices—an important part of the incentive structure—should be carefully set to reward good hospital behavior and discourage wasteful overprescription. Policymakers should also build consistent incentives to avoid confusion

on the provider side. Setting the right prices and incentives will expectedly drive China's DRG establishment process.

Technical Recommendations for China

Based on the U.S. presentation and the discussion between U.S. health care experts and the Chinese delegation, we conclude with seven key technical recommendations for China on the on-the-ground creation and implementation of DRGs.[20]

- *A diverse, large sample of hospitals from all over China is essential to create DRGs.* China has about 20,000 hospitals in different geographic locations with different bed sizes and very different mixes of patients and treatment patterns. Developing DRG rates based on a small number of hospitals, thus, is deemed to misrepresent the diversity of patients and care that exist across China. Based on this diversity, obtaining quality and comprehensive clinical data in China is likely to be extremely expensive and technically difficult.
- *All patients must be assigned to a specific DRG using a consistent formula.* All hospitals must code patients in exactly the same way. The DRG requires a precise algorithm and logic, which cannot be based on how a specific patient is treated or the clinical specialty of a treating physician. Hospitals and physicians cannot be given discretion to assign a patient to a DRG, as this practice will likely create abuses.
- *All services must be included in the DRG rate.* The prevalent practice of "feeding hospitals by selling drugs" in China could be constrained under a well-functioning DRG system. If DRG payments included all services and adequately covered all costs from treating patients, hospitals would be less likely to seek side payments. However, if DRG payments failed to include all the costs, hospitals would have to find ways to charge patients for services that were not covered by DRG payments.
- *The DRG rates must reflect the approximate treatment costs in China.* The appropriateness of a DRG classification system is determined by the homogeneity of costs within a specific DRG, but each DRG should be relatively different from others. However, the current DRG classification system in China has serious problems. Costs are not homogeneous within each DRG, and some DRGs are identical to others. These problems exist because treatment costs are generated either on the basis of charges, which are known to be distorted in China, or on treatment patterns in other countries. As the treatment patterns in the United States, Germany, and Australia differ largely from China, adopting the treatment costs in other systems will not reflect the actual costs in China.

  One feasible approach for China to adjust the current DRG classification system is by lowering DRG payments for services with large volume increases. This methodology was initially adopted

[20] The key lessons listed here were extracted from Anderson, "Installing DRG Based Payment Systems in China."

by the Japanese when they were in a similar situation. If DRG payments for one service are set too high, then there will be a financial incentive for hospitals to provide that DRG, which will result in an increase in volume in a very short term. Adjusting DRG rates downward, in this case, temporarily restores the demand-and-supply equilibrium and better estimates costs. It is important to note that this approach is merely a short-term solution.

- *Outliers need to be included in setting the payment rates.* Outlier patients refer to those with long lengths of stay or high actual spending compared to the average patient in that DRG. At present, China has a significant percentage of cases labeled as outliers and has removed them from the calculations of payment rates. The U.S. experience indicates that outliers should be included in the calculations, as hospitals will need to treat those patients as well.
- *Having a single payer system is essential.* Currently, there are various health insurers in China, and each pays hospitals differently. While there is little difference in the cost of treating people with different types of insurance, some insurers only pay hospitals a quarter of what other insurers pay for the same service. This creates a tendency for hospitals to admit patients with premium insurance that pays well and reject those with basic insurance that pays poorly, which results in an issue of access to hospital services. China needs to work toward a single payer system with all insurers paying the same rate to hospitals, as such a system will minimize access issues. Our seminar participants acknowledge that with China's 3+1 insurance scheme in place, a single payer system can only be phased in over the long term.
- *All insurers should use the same payment formula.* It is necessary to adjust payments for additional factors besides case mix. The adjustments should not include factors that are under the control of the hospital, such as bed size and technology. Each insurer should not be given rights to develop its own adjustment factors, as this will result in differential payments to hospitals.

2 THE USE OF HEALTH TECHNOLOGY ASSESSMENT IN CHINA'S HEALTH CARE REFORM

A RAPPORTEUR'S REPORT OF THE SEPTEMBER 20, 2012, CSIS-CNHDRC SEMINAR

Prepared by Xiaoqing Lu Boynton and Molly Claire Schmalzbach

Introduction

On September 20, 2012, the Center for Strategic and International Studies (CSIS) and the China National Health Development Research Center (CNHDRC) cohosted a seminar on health technology assessment (HTA) in Beijing, where top U.S. experts discussed with Chinese health officials and researchers the role of HTA in policymaking, as well as its application for China. The seminar, which was the second round of exchanges between CSIS and CNHDRC in 2012 on a series of specific issues key to China's health care reform, provided a venue for dialogue among U.S. HTA experts, industry representatives, Chinese central and local health officials, and researchers.

This rapporteur's report intends to capture the main points of the Chinese and U.S. presentations and summarize key findings of the discussion at the seminar.

Health Care Reform and Demand for HTA in China

Since the latest round of China's health care reform was launched in 2009, major gains have been achieved. The government has provided essential public health services to the Chinese population at RMB 25 per capita. The public health services include vaccines, infectious disease prevention and control, maternal and child health, and coordination of health inspection at community levels. Individuals' out-of-pocket expenses have also decreased from 40 percent in 2008 to 35.5 percent at present. The new medical assistance system, which is similar to the U.S. Medicaid program, has enhanced assistance to the poor population in rural and urban areas. Most notably, under China's 3+1 scheme for basic medical care—including the Urban Employee Basic Medical Insurance Program, the New Cooperative Rural Medical Scheme, the Urban Resident Basic Medical Insurance, and the Urban and Rural Medical Assistance System—95 percent of the Chinese population is covered by medical insurance.

Nevertheless, significant challenges persist, which need to be addressed in the next phase of health care reform in China. Despite the universal health coverage that was achieved between 2009 and 2011, the level of benefits is very low, particularly for rural residents. Also, a new system needs to be put in place that would ensure coverage for China's rural-urban migrant population.

China's rapid economic growth is accompanied by the public's growing demand for better health care, but the payment capacity remains largely limited. Hence, making sound health economic policies is essential to the success of the next phase of China's health care reform, which will need to use the tool of HTA to choose the right health technologies and medicines for China. Concerns over social equity and financial sustainability are likely to dominate the reform's next phase. HTA is expected to play a critical role in assisting decisionmaking on investment in major medical devices, establishment of China's essential drug list, and creation of academic disciplines in Chinese medical schools. As Vice Minister of Health Chen Xiaohong of China pointed out in his opening remarks, HTA will likely become a significant factor in assisting China's efforts to provide rational, quality health services.

Overview of HTA

Health technology assessment is the systematic evaluation of properties, effects, or other impacts of health care technology.[1] These health technologies take a variety of forms, including drugs; biologics; equipment; medical and surgical procedures; public health programs; support systems; and organization, delivery, and managerial systems. With so many different technologies available, it is difficult for health care decisionmakers to determine which ones to utilize—this is where HTA enters the picture. Interdisciplinary groups conduct HTA using explicit analytical frameworks and a variety of methods in order to provide evidence of the implications of using health technology. The primary purpose of HTA is to inform policymaking for health care technology, but HTA does not dictate policy. HTA is also a useful advisory tool for insurers, hospitals, clinic groups, and patient groups.[2]

HTA looks at several aspects of these technologies: technical properties; safety; efficacy and effectiveness; cost and other economic attributes; and social, legal, ethical, or political impacts.[3] HTA helps to illuminate the effectiveness of particular health technologies. As a result, HTA can help avoid the harmful use of health technologies, as well as increase the use of under-used, cost-effective technologies. HTA can also distinguish the benefit of using a technology for a particular health problem in routine conditions (effectiveness) rather than ideal conditions (efficiency). HTA increasingly asks for data on health outcomes rather than surrogate endpoints to ensure that a technology addresses the intended health issue.

With limited funds, it is important to make informed choices among competing technologies. HTA uses three main groups of methods to generate evidence for decisionmaking: (1) primary data collection, which involves gathering original data; (2) secondary/integrative analyses, which combine data from existing sources; and (3) economic analyses, which weigh costs and benefits. For example,

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[1] Clifford Goodman, "Overview of Health Technology Assessment (HTA)," presentation at CSIS-CNHDRC seminar, Beijing, September 20, 2012.
[2] Steven Pearson, "Using HTA to Guide Clinical Decisions and Policies," presentation at CSIS-CNHDRC seminar, Beijing, September 20, 2012.
[3] Goodman, "Overview of Health Technology Assessment (HTA)."

comparing health care technologies to a cost-effectiveness threshold is a commonly used way to prioritize some technologies over others. In this type of analysis, experts often use "quality-adjusted life years" (QALYs), which assume that one year of life spent in a good state of health is preferred to one year of life spent in a poor state of health, to determine the ratio of cost to QALYs gained from using a particular technology. Comparing that ratio to a program's cost-effectiveness threshold offers one way to choose which technologies to adopt.[4]

HTA must also be adapted to the individual country context so that the process is most beneficial to members of that particular health care system. How HTA should relate to government—whether it is part of government or kept at arm's length—is a key question that policy must consider given each country's own circumstances.

International Collaboration and Best Practices of HTA

Different types of groups and organizations conduct HTA and collaborate in various ways. HTA agencies share information resources, horizon scanning, priority setting, and HTA processes/methods improvement. These groups also conduct joint HTA reports, belong to professional associations, collaborate through education and training, and offer fellowships for visiting workers. Some of these prominent networks include the Cochrane Collaboration and Library, the European Network for Health Technology Assessment (EUnetHTA), EuroScan International Network, Health Technology Assessment International (HTAi), International Health Economics Association (iHEA), International Network of Agencies for Health Technology Assessment (INAHTA), International Society for Pharmacoeconomics and Outcomes Research (ISPOR), the Health Technology Assessment Network of the Americas, and Red de Evaluacion de Tecnologias Sanitarias (RedETSA). These associations generally promote information sharing and collaboration among agencies. There is also a blossoming field of educational programs in HTA offering various programs in systematic reviews, meta-analysis, clinical effectiveness, economic evaluation, and modeling/simulation.[5]

While HTA programs differ in important ways, experts around the world are encouraging the use of good practices in establishing and implementing HTA programs, involvement in international networks, and educational programs. Every HTA program should not necessarily follow every good practice—adaptation to country context is key—however, good programs will exhibit most of the good practices. When establishing an HTA program, the EUnetHTA Handbook on HTA Capacity Building advises one to identify the need for HTA and characterize the target audience. Conducting an HTA situation analysis is important to determine where and how HTA would function in the

[4] Ibid.

[5] Clifford Goodman, "The International Community of HTA and Emerging Good Practices in HTA," presentation at CSIS-CNHDRC seminar, Beijing, September 20, 2012.

current situation. Engaging stakeholders, obtaining funding, and gaining international HTA expertise are all essential components to establishing a strong and successful HTA program.[6]

Clifford Goodman of the Lewin Group offered a variety of good practices for consideration when implementing an HTA program. Programs should encompass many components—drugs, services, public health, among others—and not just focus narrowly on one area. Explicit statements regarding a program's purpose, methods, funding, and processes are central to ensuring transparency. Awareness and minimization of biases and conflicts of interest both for scientific research and internal and external stakeholders is critical. Ongoing participation in international HTA collaboration and networks promotes valuable information exchange. Additional good practices include provisions for outside appeals of HTA findings and independent reviews of HTA program performance and impacts, among others.[7]

Current Status of HTA in China

The Chinese government recognizes that its health care reform needs to be guided by the scientific development concept, the official guiding socioeconomic ideology of the Communist Party of China (CPC). China's aging population, low per capita GDP, and the widening rural-urban gap have contributed to the increasing demand for the tool of HTA in its ongoing health care reform, for which the government has allocated $124 billion since 2009[8] and will continue to fund significantly. The government has also pledged over RMB 12 billion for research and development (R&D) of new drugs between 2011 and 2015 to develop its biotechnology sector as a strategic emerging industry.[9] With the significant influx of government funding for health services and R&D, it has become critical to make scientific investment choices among competing health technologies, which need to be affordable and benefit the entire Chinese population.

China has done some limited work on HTA, but the effort has not been streamlined. Experiential decisionmaking is still dominant in China's health care sector, where scientific decisionmaking is called for to ensure health resources are rationally allocated and utilized to improve the quality of and access to health care. Over recent years, a number of efforts involving an evaluation process have been taken to improve the quality of health care and to standardize health care services. Yet, there is a significant lack of HTA capacity in China.

The Expert Committee of the Chinese Medical Association, the Chinese Stomatological Association, and the Chinese Nurses Association jointly developed the "Clinical Practice Guidelines" and the "Operation Specifications of Clinical Technologies" to provide clinical guidance. China's Ministry of

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[6] Ibid.
[7] Ibid.
[8] Dune Lawrence and John Liu, "China's $124 Billion Health-Care Plan Aims to Boost Consumption," Bloomberg, January 22, 2009, http://www.bloomberg.com/apps/news?sid=aXFagkr3Dr6s&pid=newsarchive.
[9] KPMG, "China's 12th Five-Year Plan: Healthcare Sector," May 2011, http://www.kpmg.com/cn/en/IssuesAndInsights/ArticlesPublications/Documents/China-12th-Five-Year-Plan-Healthcare-201105-3.pdf.

Health (MOH) launched clinical pathway projects in 110 hospitals across the country. The "Chinese National Formulary" was released in February 2010 and covers all drugs on the national essential drug list, national reimbursement drug list, and other common drugs. In February 2012, the "Regulations for Clinical Application of Antibacterial Agents" was released to strengthen management of clinical application of antibacterial drugs by medical institutions and regularize clinical application of antibacterial drugs. The government also organized high-tech assessment, involving allocation and utilization of large-sized medical devices, clinical research and application management of stem cells, and management of intervention treatment.[10] The MOH has also conducted exchange programs with the international community on HTA. For instance, in September 2011, Minister of Health Chen Zhu met with the chairman and experts of the International Cooperation Organization for Health Technology Assessment, and in October 2010, Minister Chen led a delegation to the 4th Sino-Swedish Medical Conference and visited the Swedish Council for Technology Assessment in Health Care (SBU) to understand evidence-based health policies and development of evidence-based medicine in Sweden.[11]

The primary HTA institution in China is CNHDRC and its Health Policy Evaluation and Technology Assessment Office, which was established in 2007 and has a staff of 7 to 10 people. The Health Technology Assessment Key Lab of Fudan University, which also focuses on HTA, was established in 1994 and has a small staff of 1 to 2 people.[12] In addition, there are several university-based institutions focusing on pharmacoeconomic assessment, evidence-based medicine (EBM), bioengineering technology assessment, and medical ethics. They include the Chinese Cochrane Center under the Huaxi Hospital of Sichuan University and the Pharmacoeconomic Research Center of Guanghua School of Management under the Peking University, among others. CNHDRC is one of the most active HTA institutions in China, has the closest connection to the central government, and plays a coordination role with other international and domestic research and medical institutions. A few examples of CNHDRC's HTA projects include the assessment of pilot work of rehabilitation medical system construction, assessment of pilot work of clinical pathway management, performance evaluation of the national essential drug system, and cost-effective analysis of influenza A H1N1 joint prevention and control.

There are several key problems in China's utilization of HTA in its health decisionmaking. Chinese decisionmakers do not have sufficient awareness of the potential application of HTA, and the scope of HTA application to date is very narrow, which is not able to meet China's health decisionmaking needs, especially for preventive technology, public health technology, and cost-effective evaluation.[13]

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[10] Dezhi Yu, "Status of Introduction of Health Technology Assessment in China," presentation at CSIS-CNHDRC seminar, Beijing, September 20, 2012.

[11] Ibid.

[12] Ibid.

[13] Renmin Wei, "Health Decision Makers' Demand for HTA: Some Thoughts Concerning Health Policy Making," presentation at CSIS-CNHDRC seminar, Beijing, September 20, 2012.

In addition, the number of HTA institutions and projects remains small in China, and there is a lack of a functioning dissemination channel for HTA results.[14]

The Connection between HTA and Innovation in China

The Chinese government is committed to indigenous innovation, driven by the leadership's thinking to transform China's export-driven growth to more sustainable growth with higher-value industries. Beijing announced in 2009 that it would support 11 national research programs with $9.2 billion by 2011 to achieve breakthroughs in key technology development.[15] One of the key focuses of the programs is new drug development and the treatment of major infectious diseases such as HIV/AIDS and viral hepatitis.[16] China's 12th Five-Year Plan, the latest national socioeconomic development blueprint for 2011 to 2015, designated seven strategic emerging industries (SEI) as the drivers for China's future economic development, one of which is biotechnology.[17]

HTA, as a valuable assessment tool, has the potential to guide China's effort to create indigenous innovation in the health care sector by providing evidence and scientific guidance for R&D and national rollout of new health technologies. HTA can frame the direction of China's innovation as it guides decisionmakers to make sound choices on investing in the right health technologies to improve national health care outcomes.

Next Steps for China

There is optimism in applying HTA to health care decisionmaking in China. China's internal health reform represents a moment of opportunity to advance the utilization of HTA across the country to ensure adequate use of the large influx of health funding and resources. There is also a consensus to build a network of HTA institutions in China, as a key next step to ramp up domestic capacity. It is also important that Chinese academic centers can provide the right mix of talents from a broad range of disciplines to the HTA process.

One of the most significant challenges for China is to address the large gap between rural and urban areas in its effort to introduce HTA, which needs to be applied locally and cannot be copied from other countries' approaches. A unitary HTA system is not likely to emerge to solve China's various health problems. China's HTA system will likely be a diversified, hybrid system in the near to medium term.

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[14] Ibid.

[15] "China to invest billions on key technology development, bio industry," GOV.cn, May 13, 2009, http://english.gov.cn/2009-05/13/content_1313699.htm.

[16] Ibid.

[17] Joseph Casey and Katherine Koleski, "Backgrounder: China's 12th Five-Year Plan," U.S.-China Economic and Security Review Commission, June 24, 2011, http://www.uscc.gov/researchpapers/2011/12th-FiveYearPlan_062811.pdf.

The Chinese government will need to improve transparency to make sure the public trusts the HTA work conducted by government agencies. All stakeholders at various levels should be engaged formally in the HTA process to make an efficient and effective HTA system.

A few key recommendations include:[18]

- The role of HTA, as one of the three pillars of evidence-based policymaking, should be expanded in China's internal health reform.
- As a main tool for health policy analysis, HTA should be used in conducting more practical studies, in order to meet health policy requirements and provide a scientific basis for policymaking.
- HTA should become an important health decisionmaking information platform by strengthening integration between HTA and evidence-based medicine and expanding the dissemination channels.

[18] The key recommendations are extracted from Wei, "Health Decision Makers' Demands for HTA."

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