Health insurance systems in China: A briefing note

Sarah L Barber and Lan Yao

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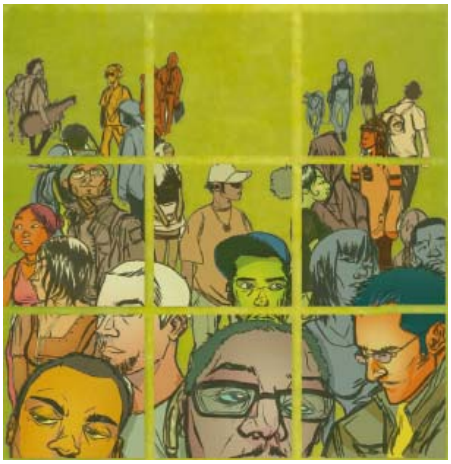
HEALTH SYSTEMS FINANCING
The path to universal coverage

World Health Organization



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1. Background

1.1. Between the 1950s and mid-1970s in China, health insurance was organized around rural agricultural communes or urban place of employment. Since the 1950s, rural populations were covered under cooperative medical schemes managed by agricultural communes. For urban populations, the Labor Insurance System (LIS) was established in 1951 for employees of state-owned enterprises (SOEs) and collectively-owned enterprises and their dependents. The Government Insurance System (GIS) was established in 1952 for government staff and retired government staff, and university students. Health care was provided through public facilities at three levels. Barefoot doctors in agricultural communes and workplace clinics provided primary care; (rural) township hospitals and (urban) district hospitals provided secondary care; and county and city hospitals offered tertiary care. Services were paid through health insurance payments (usually for medicines), but funding was primarily channelled to public facilities. Out of pocket fees were minimal, resulting from caps on supply inputs and universal insurance coverage.

1.2. After 1978, the government transformed itself from a closed centralized planned economy to a market economy over a relatively short period in an overall effort to privatize China's economy and reduce the role of the central government in regional affairs. Agricultural communes were replaced by household production units and profit-making villages. These changes resulted in rapid economic growth. Between 1978 and 2007, GDP grew by 9.8% annually; the number of absolute poor fell from 250 to 15 million between 1970 and 2007.[3] At the same time, local governments were given the responsibility for health care. With the dissolution of the rural cooperatives, rural households lost their health insurance, leading to a sharp decline in coverage from nearly universal levels in 1978 to 7% in 1999.[4] In urban areas, state owned enterprises (SOEs) were granted higher autonomy. Many SOEs closed; employees lost their jobs and health insurance coverage. User fees were implemented as public funding declined, and out of pocket payments increased.[5]

1.3. Between the mid-1980s and mid-1990s, China's health sector expanded based on the need to attract private spending. This resulted in the rapid growth of infrastructure, medicines, and medical products and devices concentrated in urban areas and tertiary hospitals. Sales of medicines and services

[3] China's Progress towards the MDGs: 2008 report, Ministry of Foreign Affairs, People's Republic of China 2008.
[4] See discussion in Rao *et al* 2010.
[5] See discussion in Blumenthal and Hsiao 2005.

became a central part of health facility income.[6] With increasing costs, particularly for hospitals, accessing health care became more difficult for those who could not pay. One inpatient episode was estimated to amount to two-thirds of average annual household expenditures in urban areas.[7] Growing inequities in service utilization and health outcomes were reported between rural and urban areas. The gaps in disease profile, access, quality, and health investments by geographic region continued to increase, with the western and poorer regions facing greater problems.

1.4. In 1997, the first health sector reform proposal was initiated by the Communist Party Committee and the State Council. This proposal included the urban employee-based medical insurance (UE-BMI) and the expansion of rural cooperative medical scheme. In 1994, the State Council carried out pilot reforms of the basic medical social insurance scheme for urban employees in *Zhenjiang City, Jiangsu* and *Jiujiang City, Jiangxi* Province. After 4 years, this salary-oriented social insurance plan was launched in 1998, as the Basic Medical Insurance (BMI), was created by the central government for urban formal sector workers. The BMI covered those eligible for LIS or GIS, as well as employees of private sector companies and small public firms. Since 1997, efforts have been made to replace LIS and GIS with a single scheme under a larger pool and, by 2003, more than half of urban employees were covered by one or more kinds of insurance. However, the 1997 reforms were not fully implemented because of a lack of financial and political commitments.[8]

1.5. After the SARs outbreak in early 2003, greater attention was paid to health reform. Some 30% of poor households were reporting health care costs as a main cause of their poverty.[9] The public became increasing vocal about unaffordable health care, impoverishment from medical expenses, and inequalities across regions.[10] Between 2003 and 2008, insurance reforms were implemented to improve access and utilization, reduce costs, and provide higher risk protection, particularly for rural populations, primarily to redress inequalities between rural and urban areas. Most programs were initiated as pilots, to be able to accumulate lessons learned prior to scaling up nationwide. In 2003, the government implemented a pilot in four provinces and 333 counties to revamp and expand the rural cooperative medical schemes. Renamed the New Rural Cooperative Medical Scheme (NCMS),

[6] In 2002, for example, drug sales accounted for 42 percent of general hospital total income; Chinese Health Statistical Digest, MoH 2009.
[7] Center for Health Statistics and Information 2004.
[8] See discussion in Meng Q 2009.
[9] See Wagstaff, Lindelöw, Wang, and Zhang 2009.
[10] The problem is frequently described as "*kan bing nan, kan bing gui,*" meaning that health care is difficult and expensive.

the program was quickly expanded to cover more than 800 million rural residents across all counties. Between 2003 and 2005, the Medical Financial Assistance (MFA) program was established to cover catastrophic health expenses for the poor, with a focus on the estimated 5% covered by the three major social assistance programs.[11] Large-scale infrastructure investments also took place. Between 2003 and 2007, the government's Rural Health Services Construction and Development Program invested more than US$2 billion in rural health infrastructure and equipment nationwide.[12] At the same time, there was rapid expansion in the supply of hospitals. Between 2000 and 2008, the number of general hospitals increased by 23%, and specialist hospitals more than doubled. The total number of general hospitals with over 800 beds increased nearly 5-fold between 2000 and 2008.[13]

1.6. In 2004, reforms in provider payment mechanisms became more systematic.[14] In recognition that user fee systems provided strong incentives for over utilization of services and medicines, more systematic experimentation began in alternative provider payment mechanisms including diagnostic-related groups (DRGs) for hospitals, capitation at primary level, and prepayment for maternal and child (MCH) services. In 2004, the MoH started experiments across seven provinces in hospital case-based payments, many of which established fixed payment rates for specific diseases, based on data about prior years' health care costs.[15] Usually, however, case-based payment systems were initiated by hospitals that wanted to attract more patients by capping their out-of-pocket costs. By 2007, some 22% of total hospitals (more than 4000 facilities) were implementing case-based payment systems designed and managed by the regional governments, hospitals, or in some cases the NCMS and BMI managers.[16]

2. Insurance expansion under the National Health Care Reform

2.1. In 2006, the government established the Health Care Reform Leading Group comprised of 16 ministries, and chaired by Vice Premier Li Keqiang, State Council. The vice-chairs are the Minister of the National Development and Reform Commission (NDRC) and Minister of Health. The Leading

[11] *Wu Bao* (five vulnerable groups including veterans, low-income individuals without children), and *Te Kun and Di Bao* (households falling below official poverty lines). Payments cover the NCMS household contribution and reimbursement of expenses beyond NCMS schedules.
[12] Asian Development Bank reports 2009.
[13] Ministry of Health, Chinese health statistical digest, 2009.
[14] Summarized from Meng Q *et al* 2010.
[15] Tianjin, Liaoning, Heilongjiang, Shandong, Henan, Shaanxi, and Qinghai
[16] Case-based payment systems set rates for single diseases or procedures in contrast to DRG systems that sets payments based on averages across groups of diseases according to diagnosis, cost, and severity.

Group began a process of deliberations that lasted over three years, in how to best reform the health sector. Pilots and experimentation were undertaken to identify options and solutions, and earlier pilots in insurance reforms were expanded. The MoH designated pilot regions to design and test comprehensive health reforms, in order to deliver and pay for universal access to essential services, medicines, and public health.[17] In 2007, the Urban Residents Basic Medical Insurance (UR-BMI) was piloted in 79 cities to cover non-working urban residents, including children, students, the elderly, and disabled – groups who had not been covered under government insurance programs since the 1980s. By 2008, 229 additional cities joined the UR-BMI pilot program. By 2007, the NCMS program had been expanded to 86% of rural counties, and the Government announced an increase in funding to health of US$ 25 to 38 billion.[18]

2.2. In April 2009, the CPC Central Committee and the State Council jointly issued the "Opinions on Deepening the Health Care System Reform."[19] The aim is to establish a 4–in-1 basic health care system focusing on public health, service delivery, medical security, and essential pharmaceuticals. The government has committed 850 billion RMB (US$124.26 billion) over three years (2009 to 2011) to implement its national health system reform plan. Of this amount, some 39% (331.8 billion RMB, US$48.46 billion) was dedicated from the central government. The total commitment amounts to an annual increase of approximately 0.8% of 2008 GDP over the three year implementation plan. The goal of the additional funds is to provide free or nearly free universal access to health care (primary, referral, emergency care, and drugs). An estimated 46% (390 billion RMB, US$56.96 billion) is dedicated to insurance subsidies for the rural and urban residents' programs.

2.3. The national health reform emphasizes building on progress achieved with the insurance reforms, and expanding coverage and benefits. Major progress was achieved with the insurance reforms and subsidies implemented in 2003. The National Health Service Surveys (NHSS) reported that national insurance coverage increased from 23 to 87% between 2003 and 2008, with coverage rates of 72% in urban areas and 93% in rural areas in 2008.[20] Coverage for rural residents increased more than seven-fold from 13 to 93% between 2003 and 2008, attributable to the expansion under the NCMS. By October 2008, 45.29% of urban residents were covered under UE-BMI, and 24.46% were

[17] Ningxia, Chongqing, and Weifang prefecture, Shandong
[18] See Rao *et al* 2010.
[19] See the 2 official documents issued by the Communist Party of China Central Committee and the State Council, 2009.
[20] For all figures in this paragraph, see Rao et al 2010 and Center for Health Statistics and Information, Ministry of Health 2009.

covered by UR-BMI.[21] Based on the NHSS 2008, some 13% were covered under insurance for urban residents (UR-BMI), and 3.0% were entitled to free public care. In addition, the Ministry of Civil Affairs continues to operate the Medical Financial Assistance program (MFA) funded by central and provincial governments to cover individual premiums and medical expenses beyond insurance reimbursements for the extreme poor.

2.4. Key activities and targets under the health reform plan for 2009-2010 related to insurance include extending coverage to the population, and expanding benefits.[22]

- *Higher coverage.* The government aims to maintain high coverage (over 90%) of the NCMS, and to extend coverage for the urban programs. Some 390 million urban employees and residents were targeted to be covered in 2009. To do this, the government increased the subsidy to 120 RMB (US$ 17.6) per person per year for NCMS and UR-BMI in 2010.
- *Better reimbursement rates.* In 2009, reimbursement rates were targeted to increase by 5% for inpatient expenses in 50% of regions over 2008 levels. In 2010, the reimbursement rates for inpatient expenses were allowed to be at least 60% for participants of the NCMS and UR-BMI programs. Reimbursements for outpatient costs from pooled funds are targeted to increase to 60 and 50% of UR-BMI and NCMS pooling regions, respectively.
- *Higher financial protection.* By 2009-10, maximum reimbursement caps should amount to six times the average annual salary of local workers (for UE-BMI), disposable income of urban residents (for UR-BMI), or per capita net income of farmers (for NCMS). Pilot projects will be launched to provide security for catastrophic events for major childhood diseases such as child leukemia, and congenital heart disease, etc.
- *Increased efficiency in management*. "Real-time" settlement of medical expenses is expected to come into operation in 80% of the areas covered by the three major insurance programs, and patients will only need to pay out-of-pocket expenses. Payment methods will be implemented such as capitation, diagnosis related groups (DRGs), global budgeting, etc. DRG pilot programs will be implemented based on about 50 diseases with clear clinical pathways.
- *Link to essential medicines*. With the announcement of the primary level essential medicines list (EML) at central level, it is intended to include 100% of essential medicines in the drug reimbursement list for

[21] From panel data survey on basic medical insurance for the urban residents, China Health Insurance Research Association

[22] See the 2 official documents issued by the Communist Party of China Central Committee and the State Council, 2009, and summary documents by the Department of International Cooperation, MoH 2010.

basic medical insurance, with medicines on the EML being reimbursed at higher rates. Drugs will be purchased through competitive tendering for supply and resale to facilities at the purchase price.

2.5. Key activities and targets for 2011 under the health reform plan related to insurance emphasize maintaining coverage levels which also improving benefits and the management of the programs.[23]

- *Expansion in insurance coverage* is targeted to 90% of all urban and rural populations through all three programs. There will be a stronger emphasis on better financial management. For NCMS, the annual balance rate should be under 15%, and the accumulated balance less than 25% of the pooled funds.
- *A basic medical insurance risk adjustment fund* system shall be established. Regular reports will be issued to the public about the income and expenses of the fund. Funds-pooling will be raised to a higher level with the realize fundraising at municipal (prefecture) level by 2011 for the two urban medical insurance systems.
- Localities are encouraged to explore and establish *negotiation mechanisms and reform in payment terms* between medical insurance agencies and service-providers. The government will be advocated to use purchasing mechanisms and involve commercial insurance agencies. *Integration of management systems covering urban and rural areas* will be explored and established.
- *The medical financing assistance (MFA)* system will aim to cover all eligible households. The program will increase the effective use of aid funds, and simplify the approval procedures for issuing relief funds and financial aid.

3. Health spending

3.1. Total health expenditures rose from 3.02% of GDP in 1978 to 4.3%, or US$ 142 per capita in 2008. Between 1978 and 1999, the central government's share of total health expenditure declined from approximately 32 to 15%. Individual out of pocket spending peaked in 2001, when nearly 60% of total health expenditures were from individual out-of-pocket payments. With the implementation of health reforms, there has been a steady increase in the share of government contribution to total health spending. In 2008, the government contributed about 24% of total spending for health, social health expenditure amounted to 29%, and private health insurance was 3.8%. Individual out-of-pocket payments contributed 42% of total health expenditures (Figure 1). Hospitals absorb some 71% of

[23] See the 2 official documents issued by the Communist Party of China Central Committee and the State Council, 2009.

total health expenditures, a slight increase since 2000. The MoH reported that total health spending had increased to 4.96% of GDP by 2009, and that the government intended to increase health spending to 8% of GDP by 2020.[24]

Figure 1. National Health Accounts, China[25]

Selected indicators	**1995**	**2000**	**2005**	**2008**
Total expenditure on health (THE) as % of GDP	3.5	4.6	4.5	4.3
General government expenditure on health (GGHE) as % of THE	51.2	38.7	40.8	46.7
Social security funds as % of GGHE	64.2	57.2	54.1	55.3
Private expenditure on health (PvtHE) as % of THE	48.8	61.3	59.2	53.3
Private insurance as % of PvtHE	0.0	1.0	6.3	7.1
Private out-of-pocket payment as % of PvtHE	96.3	97.3	92.9	92.0
Total expenditure on hospitals as % of THE	68.8	68.9	70.5	-
Total expenditure on inpatient care as % of THE	34.1	34.6	-	-
Prevention and public health services as % of THE	7.7	8.8	-	-
Total expenditure on health / capita at exchange rate (US$)	21	43	76	142

3.2. Rates of increase. Between 1978 and 2001, contributions from both the Government and social health expenditure declined as a proportion of total health expenditures. However, in real terms between 1978 and 2003, government health spending was estimated to have increased on average (8.7% per annum),[26] with higher rates of increase with the implementation of health insurance reforms. Overall, China's health spending has been growing at 16% annually, double GDP growth. Unnecessary care contributes to cost escalation.

3.3. The share of household expenditures allocated to health care decreased from 8.7 to 8.2% nationally between 2003 and 2008 according to the NHSS.[27] Based on household reports of medical expenses incurred, health expenditures continued to rise but at a slower pace than before 2003. Inflation adjusted expenditures grew at an annual rate of 3.3% for outpatient visits and 1.6% for inpatient services during 2003-2008.[28] In comparison, during 1998-2003, the annual rates of increase were 14 and 10% for outpatient and inpatient services respectively.

[24] Professor Chen Zhu, presentation May 2010
[25] National Health Accounts, as reported by the Chinese Health Economics Institute, Ministry of Health, to the WHO.
[26] See Wagstaff *et al* 2009.
[27] Center for Health Statistics and Information, Ministry of Health 2009.
[28] See Rao *et al* 2010, and Center for Health Statistics and Information, Ministry of Health 2009.

3.4. Government health spending in rural areas is primarily from county level governments. In 2009, the central government announced health spending of 118.1 billion RMB (US$17.4 billion), which amounted to 9% of total spending on health in 2008.[29] Central contributions have increased rapidly over a relatively short period of time, reflecting the government's new policies to make higher public investments in the health sector. However, most public budgetary expenditures on health are made by county governments. This implies that the level of public spending and quality of care is based on the economic capacity of the local government. Provincial governments provide supply-side subsidies to hospitals, which are, for the most part, directed to municipal hospitals. Despite the national policy emphasis on strengthening primary care since 2003, the supply of hospitals increased rapidly, with a doubling between 2000 and 2008 in the number of specialist hospitals and an increase in the number of large general hospitals with over 800 beds by nearly 5-fold.[30]

4. The three main health insurance programs

4.1. Three major health insurance programs cover specific groups: rural residents under the *New Rural Cooperative Medical Scheme (NCMS*), urban employees under the Urban *Employees Basic Medical Insurance (UR-BMI),* and unemployed urban residents under the *Urban Residents Basic Medical Insurance (UR-BMI).* The three schemes function differently in how they are financed and operate (Figure 2). Under the Ministry of Health, the NCMS as a voluntary program has expanded rapidly from 333 participating counties in 2003 to 2176 counties by 2009. Insurance coverage among rural residents increased more than seven-fold from 13 to 92% between 2003 and 2008.[31] By 2009, 94% of rural residents had insurance coverage: 90% from the NCMS and 4% from other social health insurance programs. County level governments determine the design of the NCMS for a rural population of about 840 million people. The UE-BMI, established in 1998, is a mandatory program for approximately 300 million urban employees administered at municipal level. The UE-BMI is currently estimated to cover about 67% of urban employees. The UR-BMI is the newest scheme intended to cover 200 million children, students, elderly, disabled, other non-working urban residents. It was piloted in 79 cities in 2007, and has been rolled out nationwide. By the end of 2008, it covered 60.4% of the target population. Municipal governments determine the program's design and reimbursement schemes.

[29] 2009 national budget planning figures.
[30] Ministry of Health, Chinese health statistical digest, 2009.
[31] See Rao *et al* 2010, and Center for Health Statistics and Information, Ministry of Health 2009.

Figure 2. Overview of the three main health insurance programs in China

Characteristic	New Rural Cooperative Medical Scheme (NCMS)[32]	Urban Employee-Basic Medical Insurance (UE-BMI)[33]	Urban Residents-Basic Medical Insurance (UR-BMI)
Administration	County level (2176 counties)	Municipal level	Municipal level
Local government authority	Counties determines the deductible, ceiling, reimbursement ratio, medical savings account	Wide variations across municipalities in eligibility, financing, benefits packages	Wide variations across municipalities in eligibility, financing, benefits packages
Date started	2003 (Old rural cooperative medical scheme at village in place since 1950s.)	1998	2007 (79 pilot cities) 2010 target-all cities
Participation	Voluntary at household	Mandatory for individuals	Voluntary at household
Populations	Rural residents	Urban employed	Children, students, elderly, disabled, other non-working urban residents
Target	Est. 840 million	Est. 300 million	Est. 200 million
Current coverage	94.2% (2009)	67% (200 million, end 2008)	60.4% (118 million, end 2008)
Revenues (billion RMB)	94.435 billion RMB (13.9 billion USD) (2009)	270.9 billion RMB (39.8 billion USD)	15.4 billion RMB (2.3 bill USD)
Expenditures (billion RMB)	92.292 billion RMB (13.6 billion USD) (2009)	201.6 billion RMB (29.6 billion USD)	6.7 billion RMB (985 mill USD)
Source of revenues	100 RMB/year (2009) For western areas, the contribution is 40 RMB each from local and central government, and 20 from individuals. The central contribution to eastern provinces tends to be lower, compensated by higher provincial or municipal contributions.	8% of employee wages: "6+2": 6% payroll tax on employers (ranging from 4 to 1 % by municipality) and 2% employee contribution Medical savings accounts generally cover OP expenses, medicines (employer contribution + 30% of employee contribution)	Average 245 RMB for adults, 113 RMB for minors (pilots 2008). In 2008, the government contribution was at least 80 RMB /person, with a central level contribution to west and central areas of 40 RMB/ person. Provincial contributions vary. The poor and disabled receive an additional 60 RMB per year (50% from central).

4.2. Source of financing: NCMS. For the NCMS, premium contributions are subsidized by the government (at central and local levels) and individuals also contribute a share of the premium. At its re-initiation in 2003, the annual premium was 30 RMB per person (10 RMB each from central and local governments, and 10 RMB from individual residents). With the increase in coverage, the government has gradually increased its subsidies to the program. By 2010, the annual premium increased to 120 RMB (US$ 17.6) per year (50 RMB each from central and local governments, and

[32] Sources for NCMS: Internal reports from the Ministry of Health, Center for NCMS; Center for Health Statistics and Information; Yao L 2010; Lei X and Lin W 2009; Xu Ke *et al* 2009.
[33] Sources for UE-BMI and UR-BMI: Internal reports from the National Health Insurance Research Association; Center for Health Statistics and Information; Ministry of Human Resources and Social Security; Dong 2009, Dong and Song 2009; Lin W *et al* 2009.

20 RMB from individuals for poor regions). In the wealthier regions, the local government is responsible for financing a larger part of the government share. Poor households are eligible for support from the Medical Financial Assistance (MFA) program, which covers the individual share of the NCMS contribution.

4.3. Source of financing: UE-BMI. The central government has fixed the rate for annual premiums for the UE-BMI program at 8% of payroll. Employers pay a 6% payroll tax, and employees pay an additional 2%. The premiums are composed of two parts: social pooled funds and medical savings accounts. The employee share (2%) plus 30% of the employer share make up the medical savings account, and the remaining 70% from employers are paid into a pooled account.

4.4. Source of financing: UR-BMI. The government share of the financing for UR-BMI is similar to the NCMS scheme. In 2008, the government share of the premium contribution was at least 80 RMB per person, with central government contribution in western and central areas of 40 RMB (US$ 5.9) per person per year. Provincial contributions vary. The government has stated that their share of the subsidy will increase to 120 RMB (US$ 17.6) per person per year by 2010. While large variation exists across municipality, studies across the 79 pilot cities reported average premium of 245 RMB (US$ 36.0) for adults, 113 RMB (US$16.1) for minors, whereas individuals were reported to have contributed the largest share of the annual premium.[34] Poor households are eligible for support from the Medical Financial Assistance (MFA) program, which covers the individual contribution. The poor and disabled receive an additional 60 RMB (US$ 8.2) per year.

4.5. Benefit models and reimbursements: NCMS.[35] While the situation is evolving rapidly, there are essentially four types of benefit and reimbursement models under the NCMS (Figure 3). The most common model (especially in west and central regions) is implemented in 47% of counties. This model is the formula-based reimbursement of inpatient services and the use of a MSA for reimbursements of outpatient services and preventive care. Household are expected to make contributions to MSAs, and household members can use the MSA for outpatient services. A second model is similar (applied in some 41% of counties). It uses the same inpatient reimbursement policy, but there is no MSA. The use of these two models has changed rapidly, reflecting the policy to phase out MSAs gradually over time. In 2007, for example, nearly two-thirds of counties used the first

[34] Lin *et al* 2009 based on 2007 data.
[35] Internal report from Ministry of Health, Center of NCMS based on 2009 data.

model and 7% used the second. Outpatient services and preventive care can be reimbursed from pooled funds, subject to a formula but usually no deductible. The third model (applied in about 8% of counties) reimburses both inpatient and outpatient services for catastrophic diseases, with separate deductibles and reimbursement caps. The fourth model used in 4% of counties reimburses both inpatient and outpatient services from pooled funds. This growth of this new model over time will illustrate the transition from the MSA to the pooled fund for outpatient reimbursement. All four models emphasize reimbursement for inpatient services, which are subject to deductibles and caps. The risk pool at county level represents a relatively small population (average 450,000 people) although wide variation exists across counties in population size. The MoH reports that about 41.5% of inpatient services are reimbursed (2009) and this rate has increased rapidly over time. Impatient deductibles generally increase at higher levels of the referral system, while reimbursement rates decrease. This provides some incentives for use of primary level care. Reimbursement caps for inpatient care averaged about US$ 3,600 in 2007. In 2010, the government intends to increase the reimbursement ceiling to 6 times the average net per capita income of farmers, which would amount to a cap of approximately US$ 4,547.[36]

4.6. Benefit models and reimbursements under the UE-BMI.[37] While the central government has fixed the 8% rate, provincial governments are encouraged to develop their own models in the design of the benefits packages, reimbursements, co-payments, and provider payment methods. There are two main models under the UE-BMI: the plate and corridor models (Figure 3). Under the more common plate model, the social pooled fund (SPF) covers inpatient and catastrophic expenses beyond the deductible and below the reimbursement cap. Outpatient expenses are covered by the MSA until it is exhausted, after which outpatient expenses are paid out of pocket. Under the corridor model, the MSA is used to pay for both inpatient and outpatient expenses below the deductible. Once the MSA funds are used, patients pay out of pocket until they have reached the deductible. The average MSA is relatively low at approximately 400 to 500 RMB (US$ 59 to 74). Beyond the deductible and below the reimbursement cap, a fixed percentage of medical expenses are eligible for reimbursement through the SPF. The deductible has been fixed by State Council regulation, as approximately 10% of average annual wages. In 2010, the government plans to increase the reimbursement cap from 4 times to 6 times the average annual salary. Annually, this would amount to a deductible of about US$

[36] Estimates based on net income of rural households averaging 5153 RMB (US$ 757.8) in 2009.
[37] Dong and Song 2009.

425, and a reimbursement cap roughly equivalent to US$ 25,498.[38] Some cities have developed different payment arrangements for outpatient care for specific chronic disease conditions, such as hypertension and diabetes, which can result in wide variations in benefits across municipality. Diabetes patients in Huangshui, Hubei, for example are subject to no deductibles, 75% reimbursement rates, and an annual reimbursement cap of 1680 RMB (US$ 247.1). In contrast, diabetes patients in Shantou, Guangdong, face a deductible of 1000 RMB (US$ 147.1), a reimbursement rate of 50%, and a cap of 6000 RMB (US$ 882.4).[39]

Figure 3. Benefit models and reimbursement for the three main health insurance programs[40]

Characteristic	New Rural Cooperative Medical Scheme (NCMS)[41]	Urban Employee-Basic Medical Insurance (UE-BMI)[42]	Urban Residents-Basic Medical Insurance (UR-BMI)
Models	4 main models exist. In 2009: a) 47% of counties reimburse IP services based on formula; OP services and preventive care paid through medical savings accounts (MSA). b) 41% of counties use the same model for IP but there is no MSA. OP services reimbursed with pooled funds. c) 8% of counties reimburse IP and OP services for catastrophic diseases with separate deductibles and reimbursement caps d) 4% reimburse IP and OP services from both MSA and pooled funds.	2 main parts: social pooled funds (SPF) and medical savings accounts (MSA) In the plate model, OP expenses are reimbursed by MSA until spent; pooled fund (SFA) covers IP and catastrophic expenses. In the corridor model, the MSA pays below deductible for IP and OP, and SPF pays a fixed percent above the deductible.	Pooled funds used mainly for hospitalization fees and key diseases treated on OP basis. Some cities have established MSAs.
Inpatient reimbursement	Average 41. % (2009)	Average 65% (2008); differs widely by city, financial capacity, and disease condition. Inpatient coverage with pooled fund (70% of employee contribution)	Average 45% (pilot 2007)
Inpatient deductible	100 (0-200) Township hospitals 250 (100-500) County hospital 800 (0-2000) Provincial hospital	For pooled account: 10 % of the local average payroll	0-2700 RMB (7 city survey, 2008)
Reimbursement ceilings	For inpatient care, average 30,000 RMB (range 8,000-180,000 RMB) (2009)	Pooled account: 4 times average payroll (2009)	25,000-100,000 RMB (7 city survey, 2008)

[38] Authors' calculations based on 2008 national annual average of 28,898 RMB (US$ 4249.7), China Statistical Yearbook.
[39] Dong and Song 2009.
[40] Changes occur frequently across all programs.
[41] Sources for NCMS: Internal reports from the Ministry of Health, Center for NCMS; Center for Health Statistics and Information; Yao L 2010; Lei X and Lin W 2009; Xu Ke *et al* 2009.
[42] Sources for UE-BMI and UR-BMI: Internal reports from the National Health Insurance Research Association; Center for Health Statistics and Information; Ministry of Human Resources and Social Security; Dong 2009, Dong and Song 2009; Lin W *et al* 2009.

4.7. Benefit models and reimbursements under the UR-BMI.[43] Variation exists across different municipalities in the benefits and reimbursements under the UR-BMI program. Generally, however, the emphasis is coverage for catastrophic events to prevent medically-induced poverty, and pooled funds are used for inpatient reimbursements. Most cities cover outpatient services for chronic diseases (i.e., diabetes) or fatal conditions. Some cities have established MSAs. Based on a survey of 7 of the pilot cities, 45% of inpatient costs are covered on average, inpatient deductibles range from 0 to 2700 RMB (US$ 0 to 397), and reimbursement caps range from 25,000 to 100,000 RMB (US$ 3,636 to 14,706). Similar to the other programs, in 2010, reimbursement caps are scheduled to increase to 6 times the disposable income of urban residents, which would roughly amount to US$ 9,920.[44]

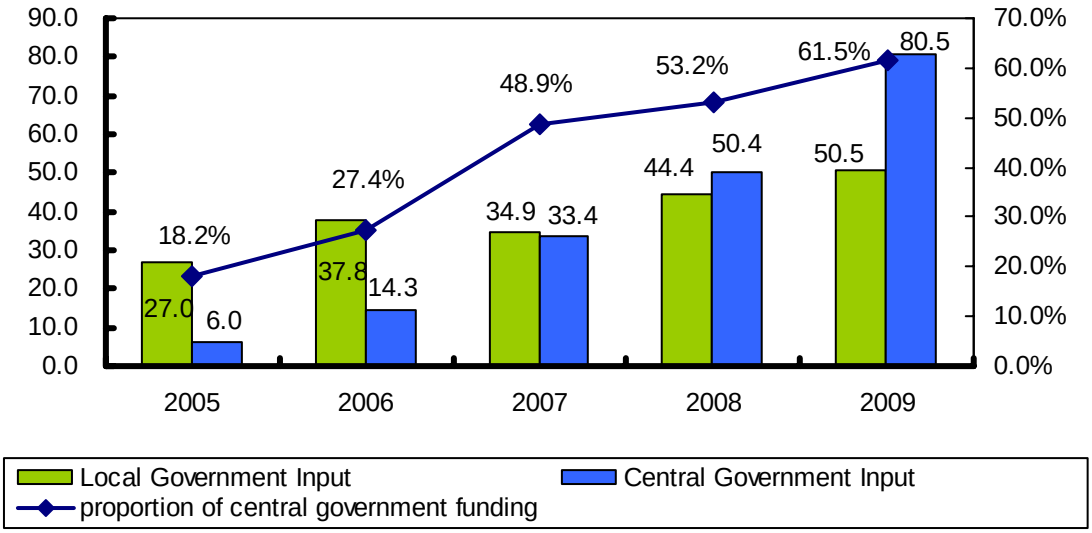
5. The Medical Financial Assistance (MFA) program

5.1. The Medical Financial Assistance (MFA) program forms an important part of the health security system. Valued by both the State Council and local governments, it provides an important guarantee for protecting the health of poor residents and in reducing medically induced poverty. The rural and urban MFA systems were launched in 2003 and 2005 separately as pilots, and were expanded nationwide in 2006 and 2008. As the MFA system gradually expanded, its objectives also expanded from subsistence allowances for low-income elderly or disabled residents to ensuring more comprehensive care for the poor. The number of diseases covered in the program expanded from a few serious conditions to a comprehensive range of both inpatient and outpatient services. It forms a part of the three-dimensional medical assistance system, which includes funding to the poor to access NCMS and UR-BMI in rural and urban areas, respectively; coverage above eligible insurance reimbursements; and temporary medical assistance. An increasing number of local governments covers outpatient services for common diseases under the program, and have strengthened the interface between MFA and basic medical insurance (BMI) systems. By the end of 2009, 93.37 million poor residents were covered by urban and rural MFA. Approximately one-third (30.70 million) are urban poor residents (about 4.9% of urban residents), and the remaining 62.67 million are rural poor residents (about 8.8% of rural residents).

[43] Lin *et al* 2009.
[44] Authors' calculations based on 2008 national annual average of per capita consumption expenditure of urban households of 11243 RMB (US$ 1653.4), China Statistical Yearbook.

5.2. The MFA is financed by government at all levels (central, provincial, city, and district governments), sourced from welfare lottery, social donations and fund interest income. By the end of 2009, government funding from all levels had accumulated to more than 36.74 billion RMB (US$ 5.4 billion) on urban and rural MFA, including 15.53 billion RMB (US$ 2.28 billion) for urban MFA and 21.21 billion RMB (US$ 3.1 billion) for rural MFA. Of this total, the central government and local governments invested 19.06 billion RMB (US$ 2.8 billion) and 17.68 billion RMB (US$ 2.6 billion) respectively. Figure 4 illustrates the increase in MFA funding from 2005 to 2009. Total funding for urban and rural MFA increased from 2.2 billion to 13.1 billion RMB, excluding prior year's surplus funds, an increase of 5.8 times and with an average annual growth of 55.5%, in which the central government financial input has increased to 8.1 billion RMB (US$ 1.2 billion) in 2009 from 600 million RMB in 2006. The proportion of central government funding has gradually increased from 26.8 to 61.5% of total funding.

Figure 4 Urban MFA and Rural MFA funding from 2005 to 2009



Source: Yao L, 2010. Figures not adjusted for inflation.

5.3. Utilization. In 2009, more than 16.0 million people accessed MFA – a 7-fold increase over 2.327 million in 2004. This implies an average annual growth in utilization of 37.9% over the past five years. In 2009, more than 10.8 million and 5.2 million poor residents used out-patient and inpatient services financed by MFA, which accounted for 11.6 and 5.6% of the targets. By the end of 2009, more than 220 million poor residents benefitted from MFA, of which 170 million were participants of the NCMS or UR-BMI programs. Total spending increased from 380 million RMB in 2004 to 117.3

billion RMB (US$ 17.25 billion) in 2009. Meanwhile, MFA fund had subsidized care exceeding 28.55 billion RMB, in which 4.2 million RMB was dedicated to out-patient subsidies, 18.5 million for inpatient services, and 4.6 million for basic medical insurance contribution.

5.4. In contrast to the rapid growth of financing of MFA, the security levels for both urban and rural MFA increased slowly. In 2009, urban and rural out-patient compensation was 147.4 RMB (US$ 22.7) per capita and 175.4 RMB (US$ 25.8) per capita respectively. Urban and rural inpatient compensation were 1713.4 RMB (US$ 252.0) and 1479.4 RMB (US$ 217.6) per capita, respectively, amounting to about 28.8 and 23.8% of general hospital costs in 2009.

5.5. MFA and basic medical insurance. MFA gradually strengthened the interface with the basic medical insurance system by funding premiums to participate in the NCMS or UR-BMI, and implementing payments beyond the compensation of basic medical insurance. By the end of 2009, total urban and rural MFA had provided funds to more than 170 million poor people to participate in the new rural cooperative medical schemes or basic medical insurance for urban residents. Among these beneficiaries, 12.8 million and 43.7 million poor residents accessed UR-BMI and NCMS, respectively, as a result of the support from MFA.

6. Key issues to be addressed

6.1. Insufficient funding. In the NCMS program, prior studies have documented large differences in published and actual reimbursement rates, attributable to insufficient funding. Studies have suggested that, if counties reimbursed patients with catastrophic illness at half of the published benefits, the fund would be exhausted and those with catastrophic illnesses would still face out-of pocket expenses of 80%.[45] It is estimated that the fund would require an income of 200 to 300 RMB (US$ 29.4 to 44.1) per person to effectively provide catastrophic coverage for rural residents. At the same time, the financial management of the schemes has been criticized because of substantial annual surpluses, which are not available for the use of local management authorities.

6.2. Large disparities. While the government has committed to funding a basic health service package and public health services, the definition of minimum levels of care differs regionally. Disparities

[45] Cited in Herd *et al* 2010

exist between and across urban and rural programs in terms of their financing and benefits, related to local government economic capacity. For the NCMS, a large share of the financing is borne by individuals and county level governments through tax revenues. There is also significant variation by counties in terms of performance based on how the NCMS is designed. Population size varies widely by country, and the risk pool at county level covers approximately 450,000 people on average. Counties that have adopted overall risk pooling perform better in terms of access to health care compared with counties that use individual risk sharing through MSAs for outpatient coverage.[46]

6.3. Coverage and benefits. Coverage has increased rapidly, particularly for the rural population. Both the rural and urban residents' insurance schemes aim for broad coverage in the initial stages of reform. Major catastrophic events are not covered under the current programs although the reimbursement ceilings are scheduled to increase in 2010. Several studies have demonstrated that higher rates of insurance have been associated with increases in catastrophic expenses. Nationally representative data reported that, between 2003 and 2008, significantly more households had catastrophic health expenses (5.0 to 5.6%).[47] This could be attributed to relatively low reimbursement caps and rates, high deductibles and copayments, and the incentives for over prescription and use of technology in the health system. Newly insured individuals also could have accessed hospital care without full information about total costs. Moreover, studies have documented higher charges for insured patients.[48]

6.4. Patient out of pocket payments. There is continued policy emphasis on preventing medically-induced poverty, and the benefits for all three schemes focus primarily on inpatient care, while outpatient services are paid out of pocket or from MSAs. Nationally, fewer households became impoverished because of medical care between 2003 and 2008 (6.1 to 4.8%).[49] While changes are occurring in the structure of the benefits packages and provider payment mechanisms, beneficiaries covered under the NCMS and UR-BMI programs continue to face high out of pocket payments. There is a policy to move towards the elimination of the MSAs, but they are still widespread, particularly for households under the NCMS in western and central China. Costs remain a barrier to access for some households. Failure to be hospitalized after referral was common nationally (25% in 2008), and costs are the main reason for about two-thirds of these failures.

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[46] Xu *et al* 2009
[47] National health services surveys 2003 and 2008, Center for Health Statistics and Information MoH.
[48] Pan *et al* 2009
[49] National health services surveys 2003 and 2008, Center for Health Statistics and Information MoH.

6.5. Incentives and design. It was noted that insufficient funding prevents reimbursements at the published rates; at the same time, substantial waste and unnecessary care provision exists because of poor incentives and design. For UE-BMI, most locations adopted the plate model in which outpatient services are not reimbursed by pooled funds; this model provides an incentive to seek inpatient care. High hospital utilization rates are likely driven by the reimbursement policy of the residents' insurance programs, which focus on inpatient coverage. Hospital admission rates nearly doubled in 2008 to 6.8% compared with 3.6% in 2003 based on the NHSS household data. Public facilities continue to rely on revenues from medicines and diagnostics for operational costs, and the incentives in provider payment mechanisms have led to poor quality, including overutilization of services and medicines. In example, in 2008, intramuscular and intravenous injection rates were very high: 30 and 35%, respectively, of rural prescriptions and 13 and 32%, respectively, of urban prescriptions.[50] The NDRC sets the prices for many basic health care services, medicines, and diagnostics. Generally, prices for basic services are set below cost, whereas prices for more sophisticated diagnostics and technology are set above costs. The government recently emphasized a zero profit mark-up policy for essential medicines, and this is currently targeted for implementation in 30% of counties. Before 2009, a 15% profit mark-up was permitted on medicines. Under pressure to generate operational costs, the pricing system provides incentives for overutilization of technology and medicines that have higher profit margins. Demand for medicines increase as their prices increase. Some hospitals have been reported to link physician pay directly to the use of sophisticated technologies such as CAT scans and brand pharmaceuticals with higher profit margins.

6.6. Rural-urban migrants. Some segments of the population remain outside of the formal insurance systems. A particularly vulnerable group is rural-urban migrants and their families. Several studies have documented serious health problems among migrant families, including lower immunization rates, and higher rates of infectious diseases, occupational health problems, and maternal mortality.[51] The central government is encouraging municipalities to include migrant workers in health insurance programs. Some municipalities that depend on migrant populations for labour have made efforts to address migrant populations into urban programs.[52] Depending on the municipality, migrant workers may have the option of joining either the urban resident health insurance program or the urban basic medical insurance program under their employers. Typically the benefits packages for migrant

[50] See Rao *et al* 2010 based on facility surveys conducted as a part of National health services surveys 2008, Center for Health Statistics and Information, MoH.
[51] Studies cited in Herd *et al* 2010.
[52] For example, in Shenzhen, more than 7 in 10 inhabitants are rural urban migrants.

workers are not as expansive as the UR-BMI or UE-BMI programs in the same municipality. Some local authorities have established plans for migrant workers, which amount to 4% of their total wages, rather than 8%, and no MSA.[53] However, employers face lower costs by switching migrant workers into the UR-BMI. Payment for services is required in advance, and the schemes and benefits are typically not portable, which can be a barrier to access.

7. Conclusions

7.1. The Chinese government's health care reform plan represents a major initiative towards ensuring universal access to basic health care, essential medicines and public health services. The political commitment, process of developing the health care reform blueprint and the implementation plan provides useful lessons for the international community, particularly for the health insurance programs. The strategies for expanding universal access rely on roll-out of the insurance programs and the gradual increase in subsidies and benefits over time. There are rising demands and expectations - particularly for the large rural population. Much of the costs for the rural insurance programs are borne by individuals and county level governments, which could pose problems for poor counties – even in more affluent provinces. It is recognized that the current government subsidies for the residents' programs will need to increase substantially over current and projected levels, and this will require a higher central level government contribution. Should such increases be realized in the financing of the programs, households could be provided higher levels of security against medical impoverishment and catastrophic health spending. At the same time, increasing the level of government spending alone may not translate into better health where the organizational and financing incentives are not aligned with quality, high performance, or health outcomes.

7.2. Risk protection. Several studies have indicated that higher insurance coverage does not necessarily lead to higher risk protection, particularly for urban and rural residents that use the NCMS and UR-BMI programs. Under the design of these programs at present, the government subsidies, benefits packages, and reimbursement schemes are modest. Based on experiences in other countries, to reduce the incidence of catastrophic expenditure significantly, the inpatient reimbursement rate would have to increase from the current average of 42% to approximately 70 to 80%.[54] In 2010, the government targets an increase in the reimbursement caps to 6 times the average annual salary of

[53] Dong and Song 2009.
[54] WHO Regional Financing Strategy 2010.

local workers or farmer's income, ranging from about US$ 4,547 for the NCMS to US$ 25,498 for the UE-BMI. With the successful expansion in coverage and commitments to increase government subsidies to these programs, there is an opportunity to examine in more detail the optimal structure and a defined minimum benefits package to ensure a higher level of risk protection, particularly for the rural and urban residents' programs. More comprehensive benefits packages, lower deductibles and copayments, and higher reimbursement rates and ceilings for the rural program in particular could help to reduce inequities across urban and rural areas.

7.3. Provider payment mechanisms. Health facilities have relied on user fees to cover their operational costs, including salaries and bonuses for health providers, since the 1980s. In addition, the government allocates funds to facilities as line-item budgets based on numbers of staff and beds. The accumulated evidence has demonstrated that these incentives have led to over utilization of medicines and services.[55] The 2009-10 work plan of the national reform explicitly aims to improve payment methods such as capitation, diagnosis related groups (DRGs), global budgeting; and to develop DRG pilot programs based on about 50 diseases with clear clinical pathways. There is a special need to continue to develop alternative and mixed methods for paying health care providers to replace the fee for service system that remains predominant, and delink the volume of services provided from health providers' incomes. Some experience with prospective payment mechanisms in the urban programs has demonstrated associations with declines in rates of expenditures and use of unnecessary technologies and medicines.[56] A recent review has emphasized a more comprehensive approach in addressing provider payment reform in conjunction with strengthening the service delivery system and effective referral, improving provider practice norms, and strengthening professional ethics.[57] This review also recommended more systematic evaluation of initiatives.

7.4. Essential medicines policies. Medicines expenditures are estimated to account for just under half of individual out of pocket payments amounting to some 1.6% of GDP – which represents a much higher level of spending on medicines in comparison with other countries. In 2009, the government issued the first part of the essential medicines list (EML) for primary level, which includes 307 items including 205 traditional preparations. In 2010, the government intends to implement the medical insurance reimbursement policy to ensure that all essential medicines are in the reimbursement list, and their reimbursement rates are much higher compared with medicines not on the EML. Primary

[55] Wagstaff *et al* 2009.
[56] Yip and Eggleston 2001, 2004
[57] Meng *et al* 2010.

level facilities are encouraged to implement zero-profit mark-ups on essential medicines. By 2010, 38% of public primary health facilities have adopted the national essential drug system.[58] In the future, a stronger emphasis on adopting evidence-based approaches for the selection of medicines in central and provincial EMLs and establishing clinical pathways could strengthen the process and the financial sustainability of the insurance system. Broader use of non-branded generic medicines would also help reduce costs. The implementation of effective generic medicines policies in this context would require a comprehensive approach including quality assurance and testing, consumer and professional education and advocacy, and generic substitution policies. However, the most important challenge to rational prescribing is modifying provider payment systems to delink physician and facility income with prescribing practices.

7.5. Strengthening primary care and public health. The national health reform aims for a patient-centred approach, and systems that promote the primary health care utilization, including incentives such as higher reimbursement rates for primary level care. Large-scale investments have been made to strengthen village and township levels, and community health service centres to promote utilization at primary levels. However, the supply of hospitals increased rapidly since 2000 and they remain the dominant source of outpatient consultations, many of which could be seen at lower levels of the health system. Promoting utilization at primary level requires shifting qualified human resources and technology to primary level and increasing quality of care, particularly for the management of chronic conditions that require more qualified staff and stronger referral systems. While the numbers of physicians has increased, the deployment of qualified practitioners to peripheral levels of the health system could be strengthened. Once the primary care level is strengthened, it would be feasible for it to function as a gatekeeper system. A prior study demonstrated improved performance by using salaried staff at village levels and centralized drug procurement.[59] In addition, the links between the public health services subsidy and the service delivery system could be strengthened. At present, at least 15 RMB (US$ 2.2) per person from all levels of the government is dedicated to 9 public health services nationwide, and the minimum contribution is scheduled to increase to 20 RMB (US$ 5.9) in 2011. The central contribution varies by local economic capacity, with higher central subsidies in western and central regions. A higher level of financial and HR support from central level will be needed for poor regions to ensure the delivery of both essential medical services and public health services, in addition to ensure the deployment of qualified staff in remote and rural regions.

[58] Professor Chen Zhu, presentation May 2010.
[59] Yip and Hsiao 2009

7.6. Other cost control and quality improvements. The increase in health care costs has slowed between 2003 and 2008. Beyond strengthening primary level care, implementing essential medicines policies, and modifying provider payments, other efforts could be made to control cost and improve quality. As a part of the 2011 activity plan under national health reform, the government is advocated to make use of purchasing mechanisms. In other countries, a more active purchasing function has resulted in increases in quality and reductions in costs. Currently, employers pay a 6% payroll tax into the UE-BMI program, but are not ensured value for their money. Given the importance of quality of care in terms of workforce productivity, reduction in sick days, and disability, employers could take a more active role in ensuring value for their insurance premium contributions under the UE-BMI program. In addition, revenue generation goals have resulted in facility purchases of sophisticated equipment and technologies. The government is currently making efforts towards incorporating cost-effectiveness analysis of interventions, which, if accepted, could help reduce costs related to introduction of technologies and medicines with only marginal health benefits relative to the cost of existing technologies.

7.7. Monitoring and evaluation. Under the national health reform, it is anticipated that the expansion of insurance schemes and their benefits packages will reduce the percent of households experiencing catastrophic health expenses or falling into poverty because of health expenditures. Higher levels of government financial support over time and changes in the reimbursement and benefits models may also lead to reductions in out of pocket health expenditures, especially among poor rural and urban residents. Given the central importance of achieving higher levels of insurance coverage and social security as a part of health reform, it is recommended to monitor trends in expenditures on medical care and the impact of insurance on financial risk protection. The NHSS provides data on average expenditure for both outpatient and inpatient care; and impoverishment due to medical expenses and catastrophic medical expenditure. Such data can be used to analyse expenditures by household income and urban and rural regions. The National Health Accounts (NHAs) provide aggregate data to compare trends in income and health expenditure. More in-depth studies and evaluations can provide detailed analyses of the impact of changes in policies on expenditures, costs, quality, and health outcomes.

Acronyms

BMI	Basic Medical Insurance
CHEI	China Health Economics Institute
CHSI	Center for Health Statistics and Information
DRG	Diagnostic-related groups
EML	Essential Medicines List
GIS	Government Insurance System
IP	Inpatient
LIS	Labour Insurance System
MCH	Maternal and Child Health
MFA	Medical Financial Assistance
MSA	Medical Savings Account
NCMS	New Rural Cooperative Medical Scheme
NHA	National Health Accounts
NHSS	National Health Services Surveys
NDRC	National Development and Reform Commissions
OP	Outpatient
SOE	State Owned Enterprises
SPF	Social Pooled Funds
RMB	Chinese renminbi
UE-BMI	Urban employees basic medical insurance
UR-BMI	Urban resident basic medical insurance

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