The Chinese Healthcare System
Structure, Problems and Challenges

Jens Leth Hougaard, Lars Peter Østerdal and Yi Yu

1 Institute of Food and Resource Economics, University of Copenhagen, Copenhagen, Denmark
2 Department of Economics, University of Copenhagen, Copenhagen, Denmark

Abstract

We describe the structure and present situation of the Chinese healthcare system and discuss its primary problems and challenges. We discuss problems with inefficient burden sharing, adverse provider incentives and huge inequities, and seek explanations in the structural features of the Chinese healthcare system. The current situation will be further challenged in the future by an aging population, an increasing need for privatization and growing expectations about quality of healthcare.

In the late 1980s, the Chinese Government launched a major reform of the social insurance system, including reforms of pension and healthcare schemes, which has had a huge impact on the organization of the entire public welfare system. Reforms have been implemented via a series of local-level experiments, particular models of which have now been selected for national implementation. The system is constantly changing and trying to respond to financial problems and adapt to the needs of the population.[1]

Despite many efforts, the general impression of the populace, as well as governing authorities, is that the reform has not been successful.[2] Cost inflation has been difficult to control and a huge inequality in access to healthcare seems to be increasing. Furthermore, the reform process itself has confused people and made them uncertain about their rights within the system; a lack of regulation has exposed the health system to corruption and so this distrust only increases.

China is a country with huge regional differences. It is therefore questionable whether it makes sense to talk about one coherent system or whether it should be considered as several co-existing subsystems that relate to different groups of people as well as different geographic locations. Moreover, any empirical analysis of the Chinese healthcare system will suffer from considerable data uncertainties and often even a crucial lack of relevant data.

Nevertheless, there have been many previous papers aiming to describe the Chinese healthcare system and its reforms.[1,3-8] We follow up on these works, describing and analysing the present structure and organization of the Chinese healthcare system. We try to identify the root of the main problems with the current system, and discuss these in relation to immense future challenges such as an aging population, increasing inequalities and a need for private delivery to be added to accommodate the growing demand for long-term care and for financing of hospital reforms.

We particularly focus on burden sharing and provider incentives. We find that the actual level of risk sharing is relatively low and, in reality, people are left to cover the main part of their healthcare expenses themselves, creating huge inequalities in access to healthcare. Moreover,
provider incentives seem to intensify this problem by creating substantial cost inflation.

The information search was conducted by searching the internet for (Chinese) official statistics reports from databases of relevant ministries\[9-13\] as well as policy websites, news media (official press Xinhua News) and relevant academic literature.

1. The Chinese Healthcare System

The role of the Chinese Central Government in the healthcare system was significantly reduced as part of China’s economic reforms in the early 1980s. Responsibility for financing and administering the healthcare sector was mainly transferred to local authorities of the different provinces. Financing of healthcare services therefore became dependent upon local taxation, paving the way for substantial inequalities between rich coastal regions and poor rural regions. The reduction in public financial support forced (and allowed) providers in the healthcare sector to earn profits on specific types of treatments and drug sales, which introduced various moral hazards and (much like in the US) resulted in significant cost inflation and further access inequality.\[1\]

The current healthcare system is the result of a series of healthcare reforms and local experiments from the 1990s. The basic structure follows a separation of the population into two main groups: urban residents (U group), corresponding to 45.7\(\%\) of the total population, and rural residents (R group), corresponding to 54.3\(\%\) of the total population.\[11\] This is closely related to the so-called hukou system.\[1\] The U group is covered by an employer-based insurance system (‘Urban Employee Basic Medical Insurance’) and also, recently, the Urban Resident Basic Medical Insurance (launched in July 2007 and based on voluntary participation at a household level), while the R group is covered by the ‘New Co-operative Medical Scheme’ (based on voluntary participation at a household level).

The U group can further be viewed as divided into three subgroups according to job function, here denoted A, B and C (although this categorization is not officially recognized). Group A comprises staff in all levels of government, the ‘parties’, non-governmental organization (NGO)-like groups, public organizations, the army, the public health sector, research institutions and the education system (which also includes university students). This group is regulated by the ‘Public Health Service Administration Act’ of 1988.\[15\] Group B consists of staff in all kinds of enterprises in urban areas (regulated by ‘The Decision of the State Council About Construction of Comprehensive Medical Care Scheme among Urban Employees’ of 1998\[16\]), while group C comprises urban residents without formal employment: children, elderly, unemployed, etc. This group is covered by the Urban Resident Basic Medical Insurance.

There are no official statistics that show the relative sizes of the three groups, but a rough estimate\[2\] seems to indicate that they represent approximately 5\(\%\), 13\(\%\) and 32\(\%\), respectively, of the total population (with some intersection between the groups).

We emphasize the difference between groups A and B for several reasons. First, the two groups are actually regulated by different ministries (the China National Labour Union and the Ministry of Organization are responsible for group A, while the Ministry of Labor and Social Security is responsible for groups B and C). Second, in addition

1 The hukou system is a population-registration system in which people are classified according to their geographical location. The individual hukou status may change in connection with job changes. For instance, if a student with rural hukou moves to a city university he/she will receive a temporary city hukou, which may become permanent if this person gets a job in the city after graduation – but there are also many instances in which a person with a rural hukou is actually working in the city without a change of hukou.\[14\]

2 According to Zhou Tianyong from the Central Party University, the number of group A members is approximately 70 000 000.\[17\] According to the Chinese Ministry of Labor and Social Security,\[18\] the number of group B members actually covered is 180 200 000. Finally, according to Lin et al.,\[19\] the number of (theoretically covered) group C members is approximately 420 000 000.
to differences in job function (public sector vs industry), there are huge differences in actual health benefits. Third, the actual relative size of group A means that they cannot be ignored as an independent group. However, insisting on treating groups A and B as independent means that many of the official data sources are difficult to fit into our framework and we mention specifically whenever this is the case.

For group A, and according to the 1988 regulation, all healthcare expenses are basically fully covered. However, the Government has announced that there will be a gradual change of conditions for group A, towards a system more like that of group B, but group A have so far retained their ‘old’ privileges (see also section 1.2 below).

For group B, the system is more complicated. The system is basically designed as an employer-based insurance scheme consisting of both an individual account and social pooling, where it is intended that the individual pays 2% of his/her gross income into his/her personal account and the employer pays approximately 6% of the individual’s gross income, of which 30% is allocated to the individual account and 70% is allocated to social pooling (these contribution rates may vary between regions according to the general economic situation). However, in effect, the implementation of this scheme varies markedly, not only between wealthy coastal provinces and the rest of the country but also between businesses with different types of ownership. For instance, unskilled labour in privately owned enterprises are usually not covered by this type of scheme even though they are under the same regulation – this happens without local (City and Provincial) Government sanction although the policy seems to be changing on this issue.[22]

As mentioned, participation is voluntary for group C (at a household level). The goal of the Central Government is to enrol all cities in the insurance scheme by 2010. As the programme is not yet fully implemented, experience is relatively limited.[19]

Finally, considering rural residents (R group) under the New Cooperative Medical Scheme, initiatives were established to set up local (at county level) voluntary insurance schemes for which both the Central and local (Provincial and Regional/County) Government would provide subsidies. This process started in the rich coastal provinces, but has recently extended to also cover central and western provinces. According to the Chinese Ministry of Health,[23] the present participation rate is around 86% of total rural residents, corresponding to 726 million people (as at 2007). In practice, there is considerable variation in the programmes from county to county and the funds involved are typically still rather small. As Liu et al.[24] noted, hospital expenses are usually reimbursed after the patient has covered all costs, so a patient who cannot afford treatment in the first place will not benefit from the programme. Furthermore, the reimbursement rates are quite low (see section 1.2). In effect, as argued by Wagstaff et al.[25] and Lei and Lin,[26] the scheme has had no impact on out-of-pocket spending or on healthcare utilization among the poor, despite a recent increase in funding from different levels of government.

Moreover, the mix up between job function and hukou status often leaves vulnerable population groups uncovered by the healthcare system. Around 225 million people categorized as farm workers actually work in the city[12] and consequently should be enrolled in the group B scheme, but in reality these workers are covered by the R group’s New Cooperative Medical Scheme. Participation is voluntary and, since the workers typically have to return to their home province if they need to use their insurance, many have consequently chosen to remain uninsured.[28]

3 In fact, individuals typically do not have to contribute to the individual account if their wage is below 60% of the local average wage and they only have to pay a maximum of 2% of three times the local average wage if their income is above this amount. Both the average wage and the actual upper and lower thresholds vary among provinces and may be used as a means to control healthcare expenses.[21]

4 Moreover, the size of the migrating labour force (floating between provinces) is around 140 million.[27]
1.1 Financing the Healthcare System

Loosely speaking, the Chinese healthcare system is financed by three main parties: Government, enterprise and individuals. The costs to government are mainly covered by taxation but also by various sorts of user fees. However, the Government has lately been in search of new income sources (e.g. the ‘public welfare lottery’ also contributes to healthcare financing). More specifically, local governments (i.e. Provincial and City Governments) in rural areas typically make use of various types of fees when financing their healthcare initiatives. Tax revenues in China primarily originate from income tax, turnover tax and sales tax on enterprise. Enterprise includes state-owned, collectively owned and private enterprise. Immediately after the reform, it was mainly state-owned enterprise that contributed to the Basic Medical Care Scheme (for group B) but lately the Central Government also seems to be emphasizing active participation of private enterprise. Finally, individual payments play a significant role in the current Chinese healthcare system. Although the individual contribution to the social schemes is rather limited, there are huge additional out-of-pocket expenses for individuals because the social schemes are unable to cover all necessary expenses.

The total expenses of the current healthcare system as well as the allocation between government, social funds and personal expenses, are presented in table I.

Total expenditure has increased considerably over the last 2 decades, which may be seen as a consequence of the healthcare reform itself (see section 1.3.2 and Blumenthal and Hsiao). Expenses as a percentage of GDP have remained relatively stable due to China’s high growth rates. Moreover, there is a substantial difference in per capita expenses between rural and urban districts, with urban expenses being four times higher than rural expenses; a ratio that has been relatively constant.

5 In short, there are three layers of government: Central Government, Provincial Government and City/Regional/County Government. Central Government is responsible for general system design and for formulating policy and reform programmes; it does not perform any direct reallocation of tax revenues, but there is some element of vertical transfer of funds to provinces in need of extra resources for healthcare programmes. The size of these funds is based on a bargaining procedure between the Central Government and the provinces. Provincial Governments collect their own tax revenues and administer the healthcare plans. They also share responsibility with City/Regional/County Government for providing the services.
As a result of the reform, the relative size of government and social health expenditure (which includes state-owned enterprise expenditure) has decreased significantly, despite a recent increasing trend. Direct government expenditure dropped from 36.2% in 1980 to 20.3% in 2007, while social health expenditure dropped from 42.6% in 1980 to 34.5% in 2007. Meanwhile, the private out-of-pocket portion has increased significantly, from 21.2% in 1980 to 45.2% in 2007. On top of this, individual contributions to social health expenditure have been introduced.[23]

Expenses for group A are divided according to whether they relate to civil servants or public institution personnel. For civil servants, healthcare expenses are registered under total government expenses, which are primarily covered by taxation. For public institution personnel, healthcare expenses are partly covered by the institutions themselves and are consequently registered under social health expenditure.[32]

A detailed picture for group B is presented in table II. The number of people included in this scheme has been steadily increasing since the first experiments in the early 1990s until 2008, at which time a total of 200 million people were covered (with three times as many working than retired members). As mentioned earlier, the scheme comprises both an individual account (with an income corresponding to 3.8% of the total liability gross wage) and a social plan (with an income corresponding to 4.2% of the total liability gross wage) but the actually intended burden is 2% for the individual and 6% for the enterprise. Both the individual account and the social plans are administered by the Provincial Government. As shown in table II, the income is larger than actual expenses for both the individual account and the social plans, creating a positive accumulation. However, the data in table II are aggregate data, and expenses for the social plans may differ significantly between regions. In particular, one might expect to find positive accumulation in rich coastal regions and it is not unusual to find negative accumulation in poorer regions.[34]

Moreover, note that the data in table II may in theory include part of group A because, officially, some group A members are under the Urban Employee Basic Medical Scheme, but no official information is available.

As mentioned previously, rural residents (R group) are under the New Cooperative Medical Scheme. In 2006, total revenue was Chinese Yuan (Y)24.49 billion, 17.4% of which was paid by Central Government, 44.0% was paid by Provincial and City Government and 23.7% by individuals (the remaining 14.9% was accrued from previous years’ surpluses). In 2007, revenues increased to Y48.2 billion.[35] Although data for total expenses covered for the R group are available, there is no indication of the actual burden sharing and, furthermore, additional out-of-pocket

---

**Table II. Urban Employee Basic Medical Insurance (group B)**[33a]

<table>
<thead>
<tr>
<th>Variable</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working people (n×1000)</td>
<td>90450</td>
<td>100220</td>
<td>115800</td>
<td>134200</td>
<td>149800</td>
</tr>
<tr>
<td>Retired people (n×1000)</td>
<td>33590</td>
<td>37610</td>
<td>41520</td>
<td>46000</td>
<td>50080</td>
</tr>
<tr>
<td>Gross income of individual account</td>
<td>518</td>
<td>585</td>
<td>706</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Gross income of social plan</td>
<td>623</td>
<td>820</td>
<td>1041</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Gross expenses of individual account</td>
<td>398</td>
<td>464</td>
<td>560</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Gross expenses of social plan</td>
<td>464</td>
<td>615</td>
<td>717</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Total gross income</td>
<td>1141</td>
<td>1405</td>
<td>1747</td>
<td>2214.2</td>
<td>3040</td>
</tr>
<tr>
<td>Total gross expenses</td>
<td>862</td>
<td>1079</td>
<td>1277</td>
<td>1551.7</td>
<td>2084</td>
</tr>
<tr>
<td>Accumulation in social plan</td>
<td>553</td>
<td>750</td>
<td>1077</td>
<td>2440.8</td>
<td>2290</td>
</tr>
<tr>
<td>Accumulation in individual account</td>
<td>405</td>
<td>528</td>
<td>675</td>
<td>2440.8</td>
<td>1142</td>
</tr>
</tbody>
</table>

*a All values are Y100 million, unless otherwise indicated.

NA = not available; Y = Chinese Yuan.
expenses are not registered. However, more detailed information is available in specific regions. For example, in the Shandong Province in 2006, the Provincial Government designed the subsidy scheme according to the County Government’s financial situation: a Provincial Government subsidy of Y8 per person per year is available for the five most prosperous areas (Jinan, Zibo, Dongjin, Weihai, Yantai), Y24 per person per year for the six poorest areas and Y12 for those in between. Since the total subsidy is Y30 per person per year, the City Government covers the residual. Finally, the farmers themselves pay Y10 per person per year to the village committees (social pooling at a community level). This scheme covers 40.63 million farmers (67\%), with a total Provincial Government subsidy of Y360 million.[36]

1.2 Healthcare Benefits

Considering group B, the general principle seems to be that outpatient treatments (if listed in the official catalogue of treatments) are covered by the individual account, and inpatient treatments are covered, up to a certain limit, by the social insurance plan. Actual details of coverage and lists of approved treatments and drugs vary among provinces. In order to control actual expenses, it is common for the scheme to include some upper and lower threshold determined by the local (Provincial and City) Government, outside of which the individual is left to pay out of pocket.[16] Moreover, the list of approved treatments and drugs may of course be used to control the total expenses of the system.

It is worth noting that rights are generally restricted to a particular province. Therefore, individuals face a substantial transition cost if they re-locate since they can use neither their individual account nor the social insurance across provinces. Consequently, in some regions with a high level of migrant labour, many workers only receive part of their benefits. For instance, in the Shenzhen City area, migrant labour only joins the social pooling part of the scheme and therefore all outpatient visits are out-of-pocket expenses for this group.[37]

In some of the early experiments, the so-called ‘Liang Jiang’ type of scheme was used.[38] In this scheme, there was no difference between inpatient and outpatient treatments but rather a specified payment channel defined when expenses (above a certain threshold) were covered by the individual account, social account and out of pocket: first the individual account covered expenses and, if this was insufficient, the individual would pay out of pocket up to a maximum of 5% of the average wage, then the social plans would reimburse a gradually decreasing percentage of the remaining amount. This scheme was originally intended to limit the costs of healthcare by limiting the element of social pooling, but was criticized for placing too heavy a burden on the individual. Therefore, most provinces have changed to the system described previously.[38]

Group A members are essentially fully covered under their system. In particular, employees of public sector institutions are entitled to coverage of expenses relating to hospital stays, medical inspections, drugs, costs of treatment, operations, recovery services, first aid, organ transplants, etc. Note that, because there is a difference in the way health expenses are financed between civil servants and personnel of other public institutions, there may, in practice, be differences in the coverage between these groups; however, in principle, they are entitled to the same benefits.[15]

As mentioned in section 1.1, the conditions of group A are gradually changing and Beijing has been among the first to implement these changes. According to “The opinion about medical care subsidy of civil servant” from 2003,[15] public servants who have been involved in the basic medical care system (including the retired and people who no longer work in the Government after the government institution reform, but are still in the public servant personnel system) receive group B benefits and are entitled to additional subsidies, which cover expenses beyond the maximum limitation of the services included in the basic medical care drug and treatment catalogue (i.e. expenses paid by an individual that are below the deduction line and expenses for privilege treatment for high-ranking officials). Due to the subsidy, the level
of compensation essentially equals that of free medical care.\(^6\)

For group C, conditions differ substantially between cities. In general, migrant worker families are not covered, even when it comes to preventive care services. Typically, the programmes focus on in- and outpatient services for chronic or fatal diseases. The study by Lin et al.\(^{19}\) suggests that the poorest and richest segments of society choose to participate in the schemes and that the poorest in particular find that participation has relieved their financial burden.

For the rural population (R group), there are no uniform conditions.\(^{26,35,40}\) The majority of counties use a model with inpatient reimbursements according to a formula plus a household savings account for outpatient visits (typically there is a deductible and reimbursement cap for using this account). Other counties, such as Jiang Shan, provide reimbursements for both in- and outpatient treatment; here, individuals shoulder the major part of the burden (i.e. Y30 of a total Y52 per year). In particular, farmers receive 10% coverage of outpatient visits to town hospitals (treating only less serious cases) without limits and they receive inpatient coverage for expenses above Y500, with an increasing percentage of coverage for increasing fixed ranges of expense.\(^7\) Yet some counties only reimburse inpatient treatment.

In 2006, the funds had a total expense of Y15.58 billion (distributed as 79% and 21% for in- and outpatient visits, respectively).\(^{42}\) Since total payment by rural residents amounted to Y5.8 billion,\(^{10}\) they were subsidized by a factor of 2.7 on average. These are aggregate numbers and looking, for example, at the particular sample of counties studied,\(^{40}\) it eventuates that only 21% of the participants (in 2007) who sought medical care were reimbursed at least some part of their expenses. Moreover, for people who experienced catastrophic illness (requiring expenditures over Y4000), reimbursement rates were as low as 8–11%. Indeed, since risk pooling at the county level is often too limited, there is a tendency to set deductibles too high in order to avoid bankruptcy of the system at the local level.\(^{26}\)

Table A1 in the Supplemental Digital Content (http://links.adisonline.com/APZ/A31) provides an overview of the insurance system’s main structure.

1.3 Healthcare Providers

In China, Government-owned city hospitals form the backbone of urban health service delivery. These hospitals are ranked at three levels according to medical criteria, and each level contains three further sub-classes. To some extent, this ranking matches the three-layer governmental structure. That is, top hospitals are typically administered by the Ministry of Health and are thereby financed directly by the Central Government, while level 2 and 3 hospitals are administered by the Provincial Government and so forth. In general, there are a relatively small number of top-level hospitals, comprising only 6% of hospitals, compared with 34% and 25% for level 2 and 3 hospitals, respectively; 34% of hospitals are outside the ranking system (see table A2 in the Supplemental Digital Content).

In rural areas at the town or village level, patients are typically referred to a local community hospital or a medical care centre (see table A3 in the Supplemental Digital Content). Although the number of medical institutions is quite high, these institutions are typically rather small and perform only a very limited range of treatments. In terms of capacity, the number of beds per 1000 individuals

---

6 In particular, inpatient expenses above Y50000 per year are covered with 95% compensation. Expenses below this are covered with 90% compensation. Individual burden of inpatient expenses (including individual account expenditure) are covered with 95% for retired officers and officers at the rank of Chief of Bureau and above, and with 90% otherwise. Outpatient expenses (including individual account expenditure) are covered with at least 90% compensation if the expenses exceed Y13000 per year.\(^{115}\)

7 20% in the range Y500–1000, 35% in the range Y1000–2000, 40% in the range Y2000–5000, 50% in the range Y5000–10000, 60% in the range Y10000–20000 and, finally, 70% of that >Y20000, with a total maximum benefit level of Y20000. Where the individual chooses a higher level of hospital, these percentages decrease. The full details of the plan are available.\(^{41}\)
in hospitals and health centres is much higher in urban areas (3.56) than in rural areas (1.43). For historical reasons, many large state-owned enterprises still operate their own hospital. In fact, due to historical development, it is not easy to identify actual ownership of hospitals and other types of medical institutions because many combined forms coexist. According to the Chinese Ministry of Health, in 2007, 31% of healthcare institutions are state owned, while 47% are private, 15% are collectively owned and the remaining 7% have other forms of ownership.

There is no GP system, but each individual chooses directly among appointed service providers. In urban areas, patients typically go directly to a hospital outpatient department and this department performs the function of the GP. In rural areas, patients may also go to medical care centres. It is possible to be transferred within the system (both horizontally and vertically) in accordance with the needs of the patient, although in the case of vertical transfers this means that the patient will receive reduced coverage (see section 1.2).

To show differences in the type of treatment that is received in urban versus rural areas, one might consider the general education level of personnel in city hospitals versus township healthcare centres (see table A4 in the Supplemental Digital Content). It is striking that only 5.7% of hospital personnel are in fact physicians (with university Masters-level education and above), while the vast majority act as doctors but only have a Bachelor-level education. Furthermore, there are no professionally trained physicians in rural area health centres.

Compared with many Western systems it is also striking that every Chinese hospital has an integrated pharmacy providing drugs, although increasing numbers of independent pharmacies are appearing in large cities. The obvious related moral hazards are discussed in section 1.3.2.

Treatment and drug charges are highly regulated. For treatments on the approved list as well as all prescription drugs, prices are regulated either by a fixed fee schedule or by a guided price determined by the Government. With a guided price, the Government determines some upper limit for the mark-up (10–15% for drugs and 5% for high-technology procedures). Around 40% of the drug market is regulated. Non-prescription drugs are only market priced if not on the approved list. Market priced drugs account for the remaining 60% of the total drug market. Treatments not on the approved list (such as births) are also market priced (see ‘China Drug Control Law’ from 2002).

1.3.1 Financing the Service Delivery

Hospital income basically originates from three sources: (i) government subsidies (primarily for covering fixed costs such as buildings, equipment and wages); (ii) patient out-of-pocket expenses; and (iii) individual account payments and reimbursements from social insurance plans.

After reforms in 1997 (typically modelled after the Hainan experiment), many hospitals went from a fee-for-service-based reimbursement scheme to a prepayment scheme similar to a monthly budget. Hospitals are prepaid 90% of what they received in a given month the previous year, with the promise of an additional 10% if the hospital maintains its quality level (according to a yearly quality review). Hospitals are further compensated ex post for unexpected cost factors according to an overall judgement. The specific details of the contracts are somewhat complicated.

The prepayment scheme can be compared with the situation before 1997, where reimbursements were based on fee for service. In order to compensate hospitals for reduced state subsidies following economic reforms, hospitals were allowed to charge fees that exceeded average costs on certain types of high-technology tests, procedures and prescription drugs. As to be expected, this led to serious cost inflation since it gave hospitals the incentive to overprescribe drugs and high-technology procedures. This is essentially the reason for the present day structure of the insurance system and the provider payment (Hainan) reforms initiated in 1997. Yip and Eggleston demonstrated that the prepayment scheme has apparently had a positive effect, slowing the growth rate of expenditures, particularly for expensive drugs and high-technology procedures.

Regarding income and expenditures for hospitals it appears that, on average, medical treatment
and drugs are equally important income generators for all types of hospitals (see table A5 in the Supplemental Digital Content). Typically (on average) profits are negative for medical treatments, while they are strictly positive for drug sales (again independent of the type of hospital). Of course, these numbers may conceal substantial differences between individual hospitals, but the overall picture seems to be in line with the fact that the Government regulates treatment prices below actual costs and that the hospitals are forced to compensate through profits made on prescription drugs.

1.3.2 Provider Incentives

To understand hospital incentives, it is necessary to understand the conditions under which they are actually working. To some extent, the public hospitals are independent units, but are still receiving government subsidies, primarily to cover part of their fixed costs (such as buildings and capital). Since the hospitals are not fully sponsored by the Government, they have some freedom to pursue other than public interests. Meanwhile, hospitals are not privately owned profit-maximizing entities so they actually end up primarily pursuing staff interests; that is, not caring about cost minimization while still being required to maintain a certain level of profitability.

There are many indicators pointing towards hospital management playing along with staff interests. For instance, various inefficiencies are often debated (e.g. a decreasing workload for doctors and low utilization rates of capital [beds and equipment], etc). Moreover, it is commonly known that there is a widespread tendency to over-treat patients by using too many (and unnecessary) drugs, high-technology tests and procedures.

It is also well known that patients usually pay so-called ‘red-envelope money’ to doctors treating them (i.e. a very big tip intended to ensure good service) and doctors furthermore obtain commissions from their drug sales. In fact, more than 90% of market-priced drugs carry a commission, implying that doctors are incentivized to choose maximum commission drugs among those with the same treatment effects. For example, a given tumour drug sold at a hospital pharmacy for Y2000 includes an actual expense for the hospital of only Y100 and a doctor’s commission of Y500 – resulting in both a sizeable commission for the doctor and a good profit for the hospital.

Both ‘red-envelope money’ and commissions are examples of hospital management accepting that doctors are quite powerful in making their own production decisions to pursue their own interests. It could also be viewed as part of a motivating payment scheme chosen by the hospital, but in connection with low degrees of efficiency it seems more likely to be the result of the former.

Together, inefficiency and employee power creates high production costs, which again increases treatment costs and drug prices. The highly limited state subsidies are further fuelling this effect. In competing for state subsidies as well as for general demand, hospitals further increase production costs since typically more subsidies and patients go to hospitals with high levels of service and technological equipment. The final result being that public hospital prices exceed private hospital prices. To finance the purchase of high-technology medical devices and buildings, hospitals typically borrow large amounts from state banks. Since the banks are also state owned, hospitals are reluctant to pay back their debts because in the end the Government cannot justify closing down hospitals.

Considering the relationship between service provider and social plan, the change from a fee-for-service scheme to a prepayment scheme has obviously changed provider incentives. Under fee-for-service, the hospitals lack incentive to reduce overall production costs because reimbursement is based directly on their activity level. Meanwhile,

---

8 For example, in the Shandong Province, a retired Provincial Government official (that is, member of group A) was treated for pneumonia in a top-ranking hospital for 22 days. He eventually died and total charges reached Y20,000. Interestingly, it eventuated that he did not use all prescribed drugs since family members attained more than 100 unopened drug packages from hospital after his death. Medical records show that he was prescribed 171 different types of drugs and, as the bill is paid per day, the maximum charge for a single day reached Y5576.
a prepaid 90% budget induces some element of cost consciousness by introducing supply-side cost sharing, although, in principle, the 90% budget limits the residual saving to a maximum of 10%. The positive effect on overall costs is also partly neutralized by the fact that hospitals face a ratchet effect in their efforts to save on costs.\[46\]

Regarding the drug market, the fact that hospitals and pharmacies are integrated units strongly limits the effect of government price regulation. Drug prices are generally considered too high, due to the situation discussed previously. However, when the Government tries to lower prices of market-priced drugs, the room for pharmaceutical companies to give discounts to hospital pharmacies and doctors will be smaller. As a result, doctors tend to substitute another type of drug and pharmaceutical companies respond by changing the drug (name, dosage or package) so that it will appear as a new type of medicine that may be market priced again (until it ends up on the regulated list). This type of product change is difficult to disclose for the Government Price Bureau. In fact, from 1998 to 2006, the Government implemented drug price reductions 17 times without success.\[52\] The average scope for price reduction increased from 15% to 40% and the loss for the pharmaceutical companies for each reduction amounted to billions of Yuan.\[53\]

Not surprisingly, regulation of the drug market has provoked heated debate, where the pharmaceutical industry complains about loss of profitability and argues for free market prices, but the public opinion seems to be that prices are still too high and need more government regulation.

### 2. Main Problems and Challenges

It is clear that the Chinese healthcare system faces many acute problems and serious challenges in the future. Although the Government is constantly trying to adapt the system to the needs of the population and to improve performance, fundamental problems such as insufficient coverage and lack of expenditure control are officially recognized.\[54\] The Central Government is aware of the necessity to substantially increase its investment in healthcare and is actually doing so (e.g. by increasing focus on the coverage of rural residents as well as ‘unemployed’ urban residents). In fact, between 2006 and 2007, the Central Government increased its health budget by 87%. Furthermore, healthcare funds are a central part of the Government’s stimulus package announced as a response to the current economic downturn.\[10\]

However, as discussed, even official data seem to indicate that there are rather serious problems, which tend to interact and create a complicated situation for the governing authorities. In particular, there is widespread concern about whether the current increase in government spending will be effectively transformed into healthcare benefits or tend to result in higher provider profits and further cost inflation due to inefficiencies in the healthcare system as a whole.\[55,56\]

While the recent reforms seem successful in providing improved coverage, several problems remain. Typically, the individual and social accounts are city or region specific, meaning that, while a person is covered in one city or region, he/she does not have the right to coverage if they move to a different city or region. Clearly, this is a huge problem for the growing migrating labour force, but in principle it concerns everyone. While it is relatively obvious that the individual accounts ought to follow people when they move between regions it is less obvious how the accounts connected with social pooling should be allocated and how local authorities should cooperate on this issue. The credibility problem\[9\] seems to amplify these difficulties because people generally lack confidence in the current system and feel uncertain about future benefits, especially those who expect to migrate in the future.

There are huge inequalities regarding who actually receives the benefits in the system. In reality, many people in need of medical services are

---

9 People (especially in rural areas) are typically distrustful of local (Provincial and Regional/County) Government insurance fund management and are worried that their insurance premiums might be diverted to other uses; in fact, this may be seen as one of the reasons for making the New Cooperative Medical Scheme voluntary.\[26\]
left without the possibility of receiving help even though they are officially covered by the system. This is because medical care typically requires considerable additional out-of-pocket payment. Insurance premiums are often low, resulting in limited benefit coverage in terms of low reimbursement rates for both outpatient and inpatient services, and this creates highly limited access.[57]

Moreover, due to price regulation and lack of a well functioning referral system, patients prefer to go to top-ranking hospitals, producing long waiting lists while there is simultaneous capacity available in lower ranking hospitals; this is obviously poor utilization of available capacity. Moreover, at all levels of government, investment seems to be focused on top-ranking hospitals, aggravating the problem.

The many instances of provider inefficiency increase cost inflation and thereby exacerbate the problem of limited access simply because few people can afford the treatment-related out-of-pocket expenses. It is somewhat ironic that price regulation ensuring cheap basic treatment, which was meant to promote access, seems to have had the direct opposite effect due to incorrect provider incentives.

Looking at future trends, the Chinese healthcare system seems to face a substantial increase in demand, for which there are at least three main reasons. First, the current efforts to increase the level of coverage through the New Cooperative Medical Scheme and the Urban Resident Basic Medical Insurance are likely to increase future demand themselves. Second, the ‘one child policy’ has at least two crucial effects, namely an aging population and a future inability of the family to take care of the elderly. Obviously, an ageing population will demand more healthcare resources simply because the elderly require more healthcare. Moreover, since the burden of the elderly will increase for the household, the younger members will no longer be able to take care of the elderly themselves. Therefore, they will be forced to outsource this function to public and/or private nursing homes. Finally, with the rapidly growing middle class and good economic conditions in general, demand for quantity as well as quality of healthcare is likely to increase drastically.

With the current problems of the Chinese healthcare system, it is obvious that this increase in demand can not be met directly by the public healthcare system. This is likely to lead to further substantial cost inflation and increased pressure on top-ranking hospitals as well as increased pressure for the introduction of private providers.

Moreover, the supply side faces a dilemma: on one hand, public healthcare resources are still insufficient and most public hospitals are in urgent need of investment; on the other hand, according to current regulation, private capital is not allowed to be invested in the public healthcare sector.[58]

Solutions to this dilemma are fiercely debated in China. Typically, public hospitals would like to lease buildings and equipment financed by private capital, but private investors, on the other hand, want to be involved more directly in the running and management of hospitals.[59] Foreign investors, in particular, have shown great interest in entering the Chinese healthcare market. With the combination of the hospitals’ urgent need for increased funding and the substantial interest shown by private investors to enter the market given acceptable conditions, the Chinese Government now seems ready to open opportunities for private capitalization. According to a former Health Minister,[60] the Government intends to encourage foreign capital to enter various large city hospitals, subject to a 70% limit of ownership, but no official plan has yet been announced.

3. Conclusions

The Chinese healthcare system has many problems, including inadequate and dysfunctional burden sharing, adverse provider incentives, credibility problems and huge access inequalities. The future situation is further challenged by an aging population, increased need for privatization and growing expectations about quality of healthcare. The problems are far from unique to the Chinese system, but the roots of the problems, as well as their potential solutions, seem to largely stem from the unusual structural and administrative features of the system. This deserves particular attention in policy debates.
Acknowledgements

The authors are grateful to two anonymous referees and the Editor, Tim Wrightson, for valuable comments.

No sources of funding were used to prepare this article. The authors have no conflicts of interest that are directly relevant to the content of this article.

References

4. Yip WC, Hsiao WC. Medical savings accounts: lessons from China. Health Aff (Millwood) 1997 Nov-Dec; 16 (4): 244-51
26. Lei X, Lin W. The New Cooperative Medical Scheme in rural China: does more coverage mean more service and better health? Health Econ 2009 Jul; 18 Suppl. 2: S25-46


34. Li Z, Cao QH. Analysis of the structural imbalance and regional difference of social welfare funding transfers [in Chinese]. J Ningxia University (Humanities and Social Science Edition) 2007; 29 (2)


56. Yip W, Hsiao WC. The Chinese health system at a crossroads. Health Aff (Millwood) 2008; 27 (2): 460-8


Correspondence: Dr Jens Leth Hougaard, University of Copenhagen, Rolighedsvej 25, 1958 Frederiksberg C., Denmark.

E-mail: jlh@foi.dk