

Organisational reform in healthcare in China: impacts on the social functions of public hospitals

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Abstract

Public hospital reform in China since the mid 1980s has had detrimental effects on hospitals' social functions, especially the provision of care for poor people. This study of hospitals in Northern China, using a range of economic measurements, indicated that there has been an overall decline in social functions since 1985, especially in secondary and tertiary level hospitals. Reason for this include the increasingly competitive medical market in China and, under the decentralisation reforms, the imperative for hospitals to generate revenue. We put forward policies to strengthen hospital social functions, including funding for essential packages of services to specifically benefit the poor and vulnerable, and increased government subsidies to support social functions in primary level hospitals where care can be more easily accessed.

Health reform in China

In the spectrum of public hospital reform from subsidy reduction to privatisation, self-sufficiency - meaning affording hospitals more control over their management and financial operations - has been the most common mechanism of decentralisation and market oriented reform in China in the past two decades (World Bank 1997). The policy of self sufficiency ("autonomous reform") in public hospitals was initiated in the 1980s and has had important impacts on efficiency and equity of health care in China (World Bank 1991) as well as on the social functions of hospitals. The social function is one of the internal determinants of equity and efficiency in public hospitals and a reflection of macro-organisational reform in the health sector (Harding and Preker 2000). The social function of public hospitals is defined as the commitment to the provision of public goods (free or with lower price than their costs) to all people, but especially to the poor. The main policy mechanism for the social functions is government subsidies for services (Over and Watanabe 2000) and this involves the provision of public goods such as preventive care, maternal and child care, medical research and medical education, as well as charity care and user charge exemption for the poor. In assessing organisational reform in China, it is of critical importance to address the recent changes to the social functions of public hospitals and the resulting impacts on access to hospital services by the poor.

Until now, indicators for social functions have not been clearly defined (Jakab, Harding et al 2000; Walt and Gilson 1994; Govindaraj and Chawla 1996). We attempted to apply economic indicators to describe the changes in the social functions of public hospitals in the course of decentralised organisational reform in China. This paper sets out the results of the application of economic variables measuring hospitals' social functions; compares social functions among the different levels of hospital; and suggests policies which could be implemented to strengthen the role of hospitals in China in providing public health services to the community, especially the poor and vulnerable.

Methods

In order to assess changes in the social function of public hospitals, three tertiary public hospitals (Provincial Hospitals), five secondary public hospitals (three Municipal Hospitals and two County Hospitals) and three primary hospitals (Township Hospitals) in Northern China's Hebei Province were sampled and surveyed, via a structured, pre-tested instrument, in terms of charity care for the poor, provision of public health services and cross subsidy from the insured to the uninsured. Data on changes to decision-making rights, market exposure, government subsidy policy and payment systems were also collected. Qualitative methods including individual interviews and focus group discussions were employed to test the perceptions of stakeholders about the social functions of public hospitals and the current situation.

Defining and measuring the social functions in Chinese public hospitals

We reviewed a range of mechanisms related to coverage of care for poor people. One of the principal measures available is the Hospital User Charge Exemption (HUCE) for poor patients. Since the mid 1990s, many public hospitals in China have set up "medical assistance wards for the poor" and formulated policies to exempt poor patients from user charges (Grogan 1995; Sun and Meng 2001).

Since 1995, seven hospitals among the eleven surveyed have incorporated and implemented policies on Hospital User Charge Exemptions for vulnerable populations, such as laid-off workers, poor households with Livelihood Assistance Cards in urban areas, and poor farmers identified by village, township and county governments. Exemptions are usually formulated as fee reductions of 10 to 30% in fees for medical service items, including the patient registration fee, user charges for lab tests, treatment and operations, etc. Significantly, drug costs are not included in the exemption list in most hospitals. Exemptions are not widely applied, and the total sum of user charge exemptions was equivalent to less than 0.25% of the total expenditure of the sampled hospitals from 1998–2000.

We also reviewed the provision of public health services by public hospitals. All the hospitals in this survey provided public health services such as immunization for children, prenatal and postnatal visits and home care for the elderly in the community. The hospitals also invest in community health service centres to meet community demand, providing salaries and part of the operating funds. The data in the survey showed decreasing trends in the workload of the community health service Extended Program of Immunisation (EPI) and Maternal and Child Health (MCH) programs from 1985 to 2000. For example, the volume of immunisation for children was 2.5 times that of outpatient visits in one of the Township Health Centres in 1985, which indicated that immunisation was the major task of township hospitals at that time. In 2000, it accounted for only 11% of patient visits.

The survey showed that the tertiary and secondary hospitals provide earmarked funds for medical research. However, investment in medical research is very small as a proportion of hospital revenue, accounting for only 1.06% of hospital expenditure in 1985, and decreasing in subsequent years.

Before the health reforms in China, public hospitals trained personnel for lower level hospitals without charges or for only a nominal charge. Secondary and tertiary hospitals also provided free training for medical students. Since the 1980s hospitals have charged trainees from primary hospitals, thereby weakening the social function and imposing an additional financial burden on lower level hospitals.

Following this broad review of hospitals' social functions, which clearly indicated a decrease, we attempted to measure the economic impacts. We applied a number of economic indices to compare social functions within and between the surveyed organisations.

The Share of Uncompensated Care (SUC)

The share of uncompensated care (to offset unpaid charges) in the government fiscal subsidy and hospital revenue directly reflects the level of the social function of public hospitals (Gray 1990; Hiebert-White 1997; Mark 1999).

Overall, the Share of Uncompensated Care in the revenue of hospitals and in the government Hospital Fiscal Subsidy were larger in 1985 than in 2000, indicating that hospitals had much stronger social functions in 1985. Our survey showed that the annual growth rate of hospital revenue was 17.6% in the period 1985–2000. At the same time, the government's Hospital Fiscal Subsidy (HFS) to public hospitals increased at an annual rate of only 1.6%. Uncompensated Care decreased by an annual rate of 4.15%. As a result, the Share of Uncompensated Care in Hospital revenue decreased from 4.2% in 1985 to 0.2% in 2000 and the Share of Uncompensated Care in the Government Fiscal Subsidy of hospitals decreased from 8.8% in 1985 to 3.6% in 2000.

Table 1 gives details of the SUC as a proportion of total hospital revenue and government subsidy to hospitals during the period 1985 to 2000. The data show that the social function of secondary hospitals was more pronounced in 1985 and that the social function in tertiary and secondary hospitals has been weakened much more significantly than that of primary hospitals since 1985.

Table 1: Changes in the Share of Uncompensated Care, 1985–2000, in surveyed hospitals

Hospital level	1985		1990		1995		2000	
	SUC % in revenue	SUC % in the HFS	SUC % in revenue	SUC % in the HFS	SUC % in revenue	SUC % in the HFS	SUC % in revenue	SUC % in the HFS
Tertiary	3.5	7.3	0.6	2.6	0.2	3.1	0.2	3.9
Secondary	11.9	23.6	2.8	9.2	0.8	6.9	0.1	1.3
Primary	1.4	2.0	1.2	2.6	3.4	10.6	0.8	1.8
Total	4.2	8.8	0.8	3.3	0.2	3.6	0.2	3.6

Our survey demonstrated that the main reason for uncompensated care (70%) is that patients cannot afford to pay the hospital bill. Other factors in uncompensated care include deferred payment, dissension between hospital and patient and in rare cases, fraud.

Index of Dissimilarity (ID)

The Index of Dissimilarity (ID) reflects the gap in access to inpatient care between the subgroup of people with medical insurance and those without medical insurance. The smaller the ID, the stronger the social function (Chen and Yan 2001).

The Index of Dissimilarity was greater in larger hospitals such as provincial hospitals and city hospitals than in county and township hospitals in 1990, indicating that larger hospitals were providing more services to inpatients with medical insurance, and less to patients without medical insurance. The survey shows that there was a decreasing ID over time in every level of hospital. Table 2 shows the decrease of ID all hospital categories over the period.

Table 2: Changes in the Index of Dissimilarity for selected hospitals

		ID by year		
Hospital level		1990	1995	2000
Tertiary	1	0.3	0.27	0.16
	2	0.24	0.22	0.09
	3	0.23	0.2	0.08
Secondary	1	0.28	0.22	0.12
	2	0.18	0.13	0.13
Primary	1	0.1	0.09	0.08
	2	0.04	0.03	0.03
	3	0.1	0.08	0.06

The variation of ID in larger hospitals was greater than in county and township hospitals, indicating that the sub-group of inpatients with health insurance used more tertiary hospital services while the sub-group of inpatients without health insurance used more primary hospital services. But the ID gap was reduced between the large hospitals and the smaller ones in 2000, which suggested that the gap between bigger and smaller hospitals in terms of the social function was less in 2000 than in 1985.

The Index of Cross-subsidy (IC)

The Index of Cross-subsidy (IC) refers to the medical expenditure gap on certain benchmark conditions between inpatients with or without medical insurance. It indicates cross-subsidy of inpatients with medical insurance to inpatients without medical insurance (Cunningham and Tu 1997).

In this study, we selected Appendicitis and Normal Labour as Benchmark Conditions because they are diagnosed easily and treated simply and clinical outcomes can be judged clearly. The larger the IC the stronger the social function in public hospitals .

Table 3: Changes in the Index of Cross-subsidy for the benchmark conditions 1990–2000

Hospital level	Appendicitis	Normal Labour
	% decrease 1990–2000	% decrease 1990–2000
Tertiary	- 19.1%	- 26.9%
Secondary	- 8.9%	- 8.9 %
Primary	- 7.2%	- 9.4 %

The Index of Cross-subsidy of medical expenditure for Appendicitis and Normal Labour in the surveyed hospitals had two characteristics. First, the IC in tertiary hospitals was higher than that in the primary and secondary hospitals. The highest IC in the tertiary hospitals was 137.8% in 1990 and the lowest was 46.1% in 2000. But in the primary and secondary hospitals, the highest IC was 27.9% in 1990 and the lowest was 5.8% in 2000. Second, the IC of Acute Simple Appendicitis and Normal Labour showed a downturn in hospitals at all levels. The IC of medical expenditure in Acute Simple Appendicitis was 19.1% less in 2000 than in 1985. The smallest variance of IC occurred in primary hospitals where the IC of total expenditure in Acute Simple Appendicitis decreased from 17% in 1990 to 7.2% in 2000.

In summary, the above indicators show that in general primary hospitals have stronger social functions than secondary and tertiary hospitals and that there has been a overall declining trend in social functions between 1985–2000.

Macro environment changes and internal reform in public hospitals

The social concerns of public hospitals are important endogenous variables of hospital functioning. Social functions are key factors of the hospital ethos and a reflection of the macro environment (Harding and Preker 2000). We considered the influence of macro health policy and internal organisational reform on how hospitals carry out social functions.

In the context of the planned economy, the Chinese government operated public hospitals as socialist welfare institutions to ensure universal access to basic health service at low prices. The government invested, managed and operated public hospitals directly. The government stressed that hospitals should focus on medical treatment, strengthen preventive services and provide health service at low cost for the whole community (Li 1993).

Decentralisation of control and management of public hospitals has grown significantly since the reforms of the mid 1980's. Public hospitals have gained more freedom in staffing, salaries, setting of hospital services, investment rights and so on. At the same time, the fiscal subsidy from government tended to decrease year after year, which made hospitals depend more and more on direct patient fees to operate. Since the mid 1980s, most public hospitals have been transformed into autonomous self-sufficient institutions (World Bank 1991), responsible for their own internal operation and revenue raising.

The financial structure of the public hospital is the basic determinant of its social function, with the provision of public goods to the community depending on the guarantee of enough funds for the provision of medical services at reduced fees.

In the planned economy, public hospitals received hospital fiscal subsidies from government as well as 15% of drug sales. They also incorporated user charge policies, and the charge standard (i.e. price of the hospital service) was set by the government to compensate for any deficit otherwise incurred. The social function was guaranteed because the government fiscal subsidy to hospitals was "soft", and financial losses due to the social function were in effect compensated by the government.

The payment system is the most important external environmental factor influencing hospital behaviour. All of the hospitals we surveyed used a Fee-for-Service payment system. Our survey showed that 74.7% of fees were less than 100% of the Cost Recovery Rate (CRR) in 2000. At the same time, hospitals did not get sufficient government fiscal subsidy to meet the balance. So, hospitals adopted a range of measures to offset their losses on medical services.

The first way was to provide medical tests and treatments with high CRRs such as CT, MRI and other high tech procedures. Another way was to divide the service items into smaller charge units in order to increase charges. For example, hospitals charge separately for dressings, supplies and consumable materials used in Appendicectomy operations when in fact they should be included in the Appendicectomy charge criterion. The third measure was to increase mark-ups of drug sales by using brand drugs rather than generic drugs.

The survey also found that the payment system for employees in hospital has changed from a fixed salary to a mode of "pay plus bonus". The extra allowance and the bonus of medical personnel exceed their basic salary, but hospital workers cannot gain the bonus unless the revenue target set by the hospital has been achieved. So there was an incentive to encourage hospital workers to provide unnecessary medical services. Other surveys have shown induced demand has reached 20%-30% of medical expenditure and that 16.3% of CT test are unnecessary (Liu 2000; Lei 2002)

Micro organisational reform has also affected the social function of public hospitals. According to Jakab, Harding et al (2000), performance of public hospitals depends on five dimensions: decision-making rights, accountability, residual claimant rights, market exposure and social functions. In order to assess organisational reform of public hospitals, we developed a questionnaire with 21 items and surveyed 46 hospital managers, physicians and nurses, and Directors of Health Bureaus at Municipal and County Governments. Participants were asked to rank each item from 1 (lowest) to 5 (highest) in terms of functioning and effectiveness.

The survey results included significant change in organisational structures before and after the reforms. Managers generally reported positive views about the reforms, with statistically significant increases in 16 (77%) of 21 items surveyed. Details are given in Table 4.

Table 4: Managers' evaluation of organisational reform in public hospitals

Determinants	Item	Before Reform			After Reform								
		1	2	3	4	5	Mean	1	2	3	4	5	Mean
Decision-making	Employment & salary**	20	2	0	1	2	1.52	12	4	7	5	2	2.37
	Capital Investment**	15	1	5	3	1	1.96	5	4	9	7	5	3.10
	Supplies and material*	5	3	3	6	8	3.36	1	0	4	10	14	4.24
Accountability	Complaint Mechanisms	8	9	3	2	1	2.09	4	12	12	0	1	2.38
	Service Contracts**	16	4	1	1	1	1.57	11	1	8	5	5	2.73
	Operational Plans*	9	6	3	1	2	2.10	6	4	2	9	7	3.25
	Quality Standards **	4	7	3	6	2	2.77	2	6	1	7	13	3.79
	Boards of Directors	19	0	0	0	3	1.55	23	0	0	0	5	1.71
	Profit & Loss rights **	8	3	2	5	2	2.50	2	1	1	14	11	4.07
Residual Claimant Rights and Cross Subsidisation	Self-determinate Income & Expenses**	4	7	3	4	3	2.76		3	0	3	7	144.07
	Loan Rights**	12	2	2	0	3	1.95		3	3	2	8	113.78
	Debts refund**	8	0	4	3	5	2.85		2	0	3	3	204.39
Market Exposure	Revenue by Market**	4	4	4	4	3	2.89		1	1	3	1	184.42
	Private Hospitals **	15	2	0	1	2	1.65		6	3	6	2	123.38
The Social Function	Services with Low Charge**	6	5	4	1	3	2.47		2	3	1	3	214.27
	Free Service**	5	2	7	3	2	2.74		1	6	5	2	163.87
	Community service**	2	6	4	4	3	3.00		0	3	1	5	184.41
	In-service Training	2	3	6	4	5	3.35		2	5	4	10	93.63

Determinants	Item	Before Reform			After Reform								Mean
		1	2	3	4	5	Mean	1	2	3	4	5	
	Payments for Scientific Research**	10	3	1	1	2	1.94		0	16	5	1	52.81
	Society Stabilization	15	7	3	2	1	1.82		20	16	3	3	01.74
	Hospital fiscal subsidy	4	7	1	5	1	2.56		10	12	0	2	32.11

Note: * Rank test shows $p < 0.05$

** Rank test shows $p < 0.01$

Relationships between organisational reform and the social functions of public hospitals were examined more closely in interviews and discussion groups. This part of the research pointed to less upbeat assessments and a more open acknowledgement of the problems being faced by managers as a result of the reforms.

Hospitals now have increased decision-making powers in the hiring and firing of employees and setting of salaries, although still constrained by the administrative departments of the government. Most of the interviewed managers of the hospital considered that they had considerably less decision-making rights than they should have, experience difficulty in employing the people they need and in discharging staff they no longer need. Hospital managers are appointed by the Department of Health and Department of Personnel of the government. The number and types of personnel are set by the Staffing Department of the government. Hiring and firing of hospital employees are also decided by the Department of Health and Department of Personnel. Even though hospital managers have the power to discharge employees of the hospital, they hardly ever put this power into action and terminate incompetent employees because of policies of “keeping social stabilization as the government’s priority”. The outcome is over-staffing and low technical efficiency. In the eleven hospitals we surveyed, the total number of employees in 2000 was 63.8% more than that in 1985 and the annual growth rate was 3.3%. In the same period, State-Owned Enterprises saw a negative growth rate of –1.1% in the number of employees. The annual salary of employees in hospitals increased from 1206 Yuan in 1985 to 4104 Yuan in 2000 (calculated by 1985 fixed prices), or by 2.4 times, an annual growth rate of 12.5%. Managers complained that they cannot overcome the problems of overstaffing and their main task is to simply allocate tasks to justify employment.

Before the moves to greater self-sufficiency, strategic and operating plans of the hospitals were formulated by government departments. Hospitals have more freedom in relation to capital investment such as building construction and medical equipment purchases, although they are still required to act in accordance with health planning and government approvals. In order to be successful in the increasingly competitive medical market, hospitals are competing on the scale of expansion and the introduction of hi-tech equipment and technologies. As a result, hospitals bear heavy financial loads and an increased need to generate profits rather than fulfill social functions.

Extension of hospital autonomy in relation to the purchase of medical supplies, materials and drugs in the 1990s also resulted in increased marketing and competition.

Thus hospitals are constrained in terms of excess staff, but compelled to seek profits by generating additional revenue. We also reviewed the accountability of hospitals, and found no significant advancement in patient complaint mechanisms and few hospitals involving community representatives as members of boards and little other evidence of accountability mechanism or governance structures involving the community. We infer that public hospitals are still accountable to government institutions rather than to the community.

In terms of cross subsidisation, we found that hospital budgets were 'soft' before the reforms, with operating deficits compensated by government funding, thus guaranteeing the social function of public hospitals to a great extent. After the reforms, restrictions on the budgets of hospitals have gradually intensified and hospitals have to generate most of their revenue from the market to survive and develop in the new competitive environment. Hospitals have to assume sole responsibility for profit and loss due to the results of operational performances. In these circumstances, hospitals have to provide more expensive drugs and medical tests with complex medical equipment to increase marginal profits and compensate for deficits due to below-cost fee levels. This leads to deterioration of the original health policy of the government, which was designed to benefit all patients through the provision of medical services at affordable prices, with any losses compensated by government funds.

Finally, there is the issue of the market exposure of hospitals. The proportion of total hospital revenue funded by government fiscal subsidy in surveyed hospitals decreased from 25% before the reform in 1980s to 6% in 2000. Hospital revenues from patients covered by the Labor Insurance and Government Insurance Schemes also declined. In contrast, the share of income from patients without medical insurance increased considerably. With the deregulation of the medical market, private clinics and private hospitals have sprung up all over China and a medical service market has come into being. Public hospitals are required to reinforce their competitive ability in the market continuously. So, more hi-tech medical equipment, medicines and procedures are being introduced by hospitals and medical costs escalate. Access to inpatient care by the poor is increasingly compromised in this arrangement.

Conclusions

We conclude that public hospitals have weak or negative incentives to conduct social functions, and support from the government for these functions has been weakened in the process of decentralisation and self-sufficiency.

We conclude firstly that there is still a lack of comprehensive, integrated, sensitive indicators to measure the social functions of hospitals. Individually, the measures we applied have specific weaknesses. The Index of Cross-subsidy is biased by induced demand because unnecessary services may distort the subsidy from insured patients to uninsured patients.

The User Charge Exemption for the poor is the most direct method for fulfilling the social function of hospitals, but it is not implemented effectively in practice. The Share of Uncompensated Care in the Hospital Fiscal Subsidy and as a proportion of total hospital revenue can reflect the social function directly, but is subject to distortion by bad debt. The decrease in the Index of Dissimilarity in tertiary hospitals and primary hospitals in the process of reform implies that it can be quite ambiguous and, therefore, should be used with caution.

However, taken together the indicators point clearly to a decreasing trend in the social function of public hospitals during the reforms. The share of uncompensated care in hospital revenue and hospital fiscal subsidy and the cross-subsidy index of the population with medical insurance over those without medical insurance decreased year by year, reflecting the weakened social function during ongoing institutional reform of public hospitals. The gradual decline of ID also reflects the decline in coverage of the population by medical insurance schemes.

It can be seen from the indicators we calculated that primary hospitals mainly provide cost-effective medical services with better geographical accessibility because they have a lower Index of Dissimilarity and a greater Share of Uncompensated Care in hospital revenue and hospital fiscal subsidy.

The qualitative research provided a counterpoint to the economic assessments we undertook. While managers felt that the social functions had been strengthened, more targeted discussion and probing in focus groups brought out the frustrations and problems actually faced in the areas of human resources and revenue generation. Our economic assessments contradicted the managers' more positive evaluations of the effects of the reforms.

China's health system is encountering similar problems to those faced by the command economies of the former Soviet bloc – how to balance social justice and the need to free the economy from the costly and inefficient burden of welfare programs. In pursuing greater self-sufficiency and privatization, China potentially faces greater income disparity, breakdown in community care and increasing inability of the population to access affordable health care (Liu, Hsaio and Eggleston 1999). The challenge for Chinese health care, like former Soviet countries (and indeed for developed health systems including Australia's), is to pursue reform to improve efficiency and performance, but at the same time to ensure equity and access for all the population.

Some policy recommendations

Based on the study findings and analysis, we put forward some suggestions to strengthen the social functions of hospitals and to improve access and services for the community, particularly poorer people.

First, there is a need to clearly define the social function of public hospitals in this transitional period in China. The funding and management systems of public hospitals and the operating environment have changed significantly during the transition from a planned economy to a market economy. Public hospitals have been changed from social welfare institutions into market entities. Even though a large amount of hospital fiscal subsidy and infrastructure investment were funded by the government during reform, the share of uncompensated care in hospital fiscal subsidy and the share of the uncompensated care in hospital revenues have decreased gradually and have less influence on hospital funding and overall objectives. Specific regulations for the social function of Chinese public hospitals have not as yet been set up. Public hospitals tend to pursue economic benefits and targets and neglect social benefits or even abandon social objectives entirely. We believe that the social function of public hospitals in China must be more clearly delineated and emphasised to ensure access for the community, especially the poor, to public health services.

The exact nature of the social function of public hospitals should be clarified in law. Minimum standards should include EPI, MCH, health promotion, community services, and medical research and training, charity care and user charge exemptions for the poor. One way to achieve this is to develop an Essential Package of Services for public hospitals aimed at providing basic care and emergency treatments for the community.

The package of essential services could be funded through the taxation system, by the re-allocation of tax exemptions enjoyed by public and non-profit hospitals. At present, hospitals are divided into three kinds: the private for-profit hospitals, the private non-profit hospitals and the public hospitals. Public hospitals and private non-profit hospitals enjoy government fiscal subsidy and tax exemptions. At the same time, they should accept price regulation. Profits should only be used for development of the hospitals rather than for the benefit of hospital staff (through bonuses) and investors. We believe that a certain proportion of profits of "non-profit hospitals" should be used to provide charity care and public health services. In this way, we can distinguish non-profit hospitals from for-profit hospitals. The non-profit hospitals would enjoy tax exemptions in return for providing free medical services for the poor. The tax exemptions would be an incentive for non-profit activities and considered as a "taxation outlay" by the government, so the non-profit hospital would refund exempted taxation to society, especially to vulnerable populations. The non-profit hospitals run by the government receive significant hospital fiscal subsidy from government, so it is reasonable to request hospitals to provide charity care and user charge exemption with part of the government subsidies.

Second, organisational reform needs to be refined and targeted to ensure continuing social functions of public hospitals and we recommend that the governance structure of public hospitals should be modified. Hospital boards of directors should include community representatives and the boards should be responsible for setting the objectives of the hospital. The relationship between the board of directors and the professional hospital directors should be compatible with the objectives of hospitals and the objectives of the community. In addition, micro-organisational decision-making powers available to hospital managers should be enhanced to facilitate more effective management and better levels and mix of staffing.

Third, at a macro level, the Fee-for-Service payment system should be reviewed with the aim of introducing output based funding and pre-payment systems for the control of medical expenditure escalation. To address the “salary plus bonus” payment system for hospital employees, it is important to cut off the connection between hospital employees’ income and hospital revenue to eliminate induced demand and its detrimental impacts on the social function of public hospitals.

Fourth, funding mechanisms need to support the social functions. The government must raise funds for non-profit hospitals to maintain and expand the social functions aimed at ensuring social equity through providing public services and user charge exemptions for the poor. Access to basic medical services for the poor, maintenance of social equity and fairness are basic rights. Accordingly, the Department of Finance of the government, the public hospitals and the community at large need to contribute funds for the social function of non-profit hospitals. The government could combine the present measures of charity care and user charge exemptions into a new system of medical financial assistance to provide basic medical services targeted to the poor.

Finally, we see a need to reallocate the hospital fiscal subsidy. Our study found that utilization of services provided by primary hospitals by patients without medical insurance is much greater than secondary and tertiary hospitals because they are more accessible geographically and are more affordable (as well as being more cost-effective). However, the fiscal subsidy for hospitals at county and township level is much less than that of city hospitals and provincial hospitals. For example, there were 2794 city hospitals, 3465 county hospitals and 54022 township hospitals in China in 1999 and the total government fiscal subsidy was 8.182 billion Yuan, 2.712 billion Yuan and 4.802 billion Yuan respectively. The Hospital Fiscal Subsidy per bed for the three levels was 8868.4 Yuan, 4612.1 Yuan and 6090.8 Yuan, respectively. It is clear that the subsidy to county and village hospitals is much lower than that of city hospitals.

To compensate for this, we believe that government needs to adjust the structure of the fiscal subsidy to strengthen the social functions of county and township hospitals by the re-allocation of government health funds to these levels. In addition, there is the capacity for the department of health and the department of the civil affairs of local government to operate selected public hospitals targeting the poor meaning, in effect, greater public control rather than market orientation and privatization.

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References

- Chen JY and Yan F 2001, ‘Employing the Index of Dissimilarity to evaluate health equity’, *Chinese Health Resource*, vol 4 no 4, pp 161-163
- Cunningham PJ and Tu HT 1997, ‘A changing picture of uncompensated care’, *Health Affairs* July/August
- Govindaraj R and Chawla M. 1996, ‘Recent Experiences with Hospital Autonomy’ in *Developing Countries—What Can We Learn?* Data for Decision Making Project, Report No. 32.2. Harvard University, Boston.
- Gray BH 1990, ‘Nonprofit Hospitals and The For-profit Challenge’, *Bull NY Acad. Med.* vol 66 no 4, pp 366-375
- Grogan CM 1995, ‘Urban economic reform and access to health care coverage in the People’s Republic of China’, *Soc Sci Med*, vol 41 no 8, pp 1073-1084

Harding A and Preker A 2000, 'Innovations in Health Care Delivery: Autonomization, Corporatization and Privatization of Public Hospitals' in *Innovations in Health Care Delivery: Organisational Reform in the Public Sector*, Preker A. and Harding A (eds.), Oxford University Press, Oxford.

Hiebert-White J 1997, 'Hospital Conversions: Does Not-for-Profit Status Matter?' *Health Progress* March/April, pp 10-16

Jakab M, Harding A, Preker A and Hawkins L 2000, 'Organisational Reform and Management of Public Providers: Focus on Hospitals' in *Flagship Course on Health Sector Reform and Sustainable Financing*, World Bank, Washington D.C.

Lei HC 2002. 'Research on the over-use of CT Scan in Hospitals' *Chinese Health Economics* 10, pp 23-27

Li XP 1993, 'The marketization of health care' *Chinese Hospitals' Management* (2), pp 5-7

Liu Y, Hsiao WC and Eggleston K 1999, 'Equity in health and health care: the Chinese experience', *Soc Sci Med* vol 49 no 10, pp 1349-56

Liu XZ, Liu YI and Chen NS 2000, 'The Chinese experience of hospital price regulation' *Health Policy and Planning* 15 (2), pp 157-163

Mark TL 1999, 'Analysis of the rationale for, and consequences of, nonprofit and for-profit ownership conversions', *Health Services Research* vol 34, no 1, pp 83-101

Meng QY, Xu LZ. and Chen, NS 1997, '*Health Economics*', Nanhai Press House, Haikou.

Sun Q and Meng Q 2001, 'The Contents, Ratio and Utilization of the User Charge Exemption Mechanism'. *Chinese Health Economics* 5

Over M and Watanabe N 2000, 'Evaluating the Impact of Organisational Reforms in Hospitals' in *Hospital Organisational Reform in Developing Countries*, Preker A & Harding A (eds), Oxford University Press, Oxford

Walt G and Gilson L 1994, 'Reforming the Health Sector in Developing Countries: The Central Role of Policy Analysis', in *Health Policy and Planning* vol. 9 no. 4

World Bank 1991, '*China: Long-Term Issues and Options in the Health Transition*', World Bank Sector Report, World Bank, Washington DC.

World Bank 1997, '*Financing Health Care in China: Issues and Options*', World Bank, Washington DC.

Notes

ⁱ Poor families under the poverty level certified by the Municipal Government.

ⁱⁱ We used the Share of Uncompensated Care in the hospital revenue (SUC1) and the Share of Uncompensated Care in the government fiscal subsidy (SUC2) as indicators of social function of public hospitals. The larger SUC1 and SUC2 are, the stronger the social function of public hospitals.

The function is defined as:

$SUC1 = UC / REV * 100\%$

$SUC2 = UC / GFS * 100\%$

where the REV refers to Hospital revenue, GFS refers to the Government Fiscal Subsidy to public hospitals.

iii Index of Dissimilarity is evolved from the Index of Dissimilarity of Health Status of different subgroups of people. The formula is as follows:

$$ID = \Delta 1/2 * |S_{jp} - S_{jh}|$$

Where the S_{jp} indicate the percentage of the people with or without medical insurance in a given area and S_{jh} indicates the percentage of inpatients with or without medical insurance in the hospital, assuming that the flow of patients have no significant effects on the component of the inpatients. So, ID implies equitable access to inpatient care between the subgroup of people with medical insurance and that without medical insurance. If the gap between the percentage of inpatients with medical insurance in one hospital and the percentage of people with or without medical insurance covered by the same hospital is smaller, ID will be smaller, and the gap of inpatient services between the two subgroups will be smaller. It will indicate a stronger social function in the hospital. (Chen and Yan 2001)

iv The Index of Cross-subsidy (IC) is as follows.

$$IC = (E_{ci} - E_{cj}) / E_{cj} * 100\%$$

Where the IC indicates the Cross-subsidy Index, E_{ci} the average expenditure of inpatients with medical insurance for the same kind of Benchmark Conditions and E_{cj} the average expenditure of inpatients without medical insurance for the same kind of Benchmark Conditions .

v It is assumed that public hospitals provide health services at a lower price than the cost of the health services. The Cost Recovery Rate refers to the ratio of the price of health services to the cost of the health services, such as treatments and diagnostic tests. So CRR indicates the difference between user charges and the cost of health services.

The formula of CRR is as follows:

$$CRR = P / C * 100\%$$

Where P refers to the user charge set by the Price Authority at Provincial Level, i.e. the price of the health service items and C refers to the cost of the health service items.