

Economic Reforms and the Acute Inpatient Care of Patients With Schizophrenia: The Chinese Experience

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Objective: This study compared insured and uninsured schizophrenic inpatients in China and examined changes in the acute inpatient care of schizophrenic patients during China's economic reform era. **Method:** Detailed chart reviews of 50 randomly selected inpatients discharged from a hospital in central China each year from 1984 through 1993 identified 321 patients with schizophrenia. Demographic, insurance, treatment, and cost data of these patients were collected from the charts. **Results:** With logistic regression models to control for confounding variables, the analyses showed that the 129 insured patients were significantly more likely than the 192 uninsured patients to be urban residents, to be older, to have had 7 or more years of schooling, and to have had more psychiatric hospitalizations; moreover, their index admissions were longer and were more likely to include use of traditional Chinese medications. The estimated 19% of schizophrenic individuals in the community with health insurance receive inpatient treatment 2.8 times more frequently than the 81% without insurance. Compared to admissions in 1984–1988, admissions in 1989–1993 were significantly shorter and involved longer periods of polypharmacy with multiple antipsychotic medications but included lower mean chlorpromazine-equivalent doses of medication. The relative cost of inpatient care for an acute episode of schizophrenia increased 3.5-fold over the 10-year period, from 11% of mean annual household income in 1984 to 37% in 1993. **Conclusions:** Changes in the incentive system for care providers and rapid increases in the cost of care during the economic reform era have resulted in increasingly restricted availability of services for the many schizophrenic patients without health insurance.

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China has never provided free hospital services to all of its citizens; only about 12% of the population has comprehensive medical insurance that covers the cost of hospitalization (1). Nevertheless, inpatient care was affordable for the majority of China's citizens in the era before reform (i.e., before 1978), because the state rigidly controlled prices of services, charges for drugs, and salaries of medical workers. The new philosophy of the post-1978 economic reform era is that prices of services, including health services, should be based on market demand. Beginning in the early 1980s, state subsidies to hospitals steadily declined, so hospitals have been forced to compensate for the lost revenue by increasing charges for routine services and by providing additional fee-generating services. By the early 1990s, hospitals (like other "enterprises") were ex-

pected to become economically self-sufficient (2). Outpatient and outreach services, which are less profitable than inpatient services, have been cut back, particularly in psychiatry. The increases in charges and the subsequent relaxation in the state's regulation of health services has fostered the development of a small, but growing, private sector: foreign drug firms have become increasingly influential, small private hospitals have become more numerous, and some clinicians have moved from state institutions to private practice.

As the costs of care skyrocketed, the availability and comprehensiveness of health insurance decreased. Starting in the early 1990s, insurance providers (primarily the government and government-supported industries) tried to limit their financial burden by tightening the eligibility criteria for health insurance benefits and by introducing copayments or maximum yearly charges. The state is also trying to promote private insurance and new cooperative insurance plans to replace state-sponsored health insurance, but most of these insurance schemes remain small pilot projects (3). Despite the tightening of insurance eligibility and the rigid separation of psychiatric and nonpsychiatric services (gen-

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eral hospitals in China do not have psychiatric wards), there has never been an attempt to treat insurance coverage for psychiatric problems differently than insurance coverage for other health problems, as has happened in the West.

This scenario of rapidly escalating costs, tightened insurance eligibility, and privatization is all too familiar to Western readers. The lessons learned in China may be of value to other countries that are trying to provide comprehensive health services to a large, aging population while, at the same time, trying to avoid overburdening the state with an enormous welfare bill that retards economic development. This article examines one aspect of the unfolding drama: the effect of increased costs and the changing insurance environment on the inpatient care of patients with schizophrenia.

METHOD

The study was conducted at the 500-bed Shashi Psychiatric Hospital, the main acute-care psychiatric facility for the city of Jingsha (population=1.4 million) and the surrounding rural counties (population=7.7 million) in Hubei Province. The hospital is operated by the Ministry of Civil Affairs (i.e., the welfare ministry), and the treatments received (primarily antipsychotic medications) and the costs of care are typical of those for acute-care psychiatric hospitals in China's small-to-medium-sized urban centers.

For each year from 1984 to 1993, 50 charts were randomly selected from the charts of all patients discharged during the year. The patients' demographic characteristics, the types of treatments received, and the cost of the admissions were obtained from the charts by trained coders. The primary discharge diagnoses of these 500 patients were as follows: schizophrenia (N=321, 64.2%), affective disorders (N=64, 12.8%), other psychoses (N=56, 11.2%), neurotic disorders (N=31, 6.2%), organic disorders (N=24, 4.8%), alcoholism (N=3, 0.6%), and personality disorder (N=1, 0.2%). The Chinese diagnostic criteria used during this period (4, 5) were similar to the American diagnostic system of the time (DSM-III and DSM-III-R); one important exception is that Chinese clinicians require a 3-month (not 6-month) duration of illness to diagnose schizophrenia.

We limit our analysis in this article to the 321 patients with a discharge diagnosis of schizophrenia. The analysis focused on the relationship of patient and treatment characteristics to two variables: insurance status (with or without coverage for inpatient care) and time of admission. For some characteristics, yearly values fluctuated widely because of the relatively small number of cases in each year (from 26 to 35 patients), so most time trends were analyzed by comparing the mean value for 1984–1988 with that for 1989–1993. Three groups of characteristics were assessed. 1) Patients' demographic and prior treatment characteristics included age at onset, age at current admission, duration of illness, number of hospitalizations, gender, location of residence (urban or rural), level of education (less than 7 years versus 7 or more years of schooling), and marital status (never married versus ever married). 2) Characteristics of the current admission included length of stay, mean daily chlorpromazine-equivalent dose of medication (6) (not including long-acting depot medications, which were used by less than 3% of patients), simultaneous use of two or more antipsychotic medications at any time during the admission (yes or no), proportion of time during the admission in which the patient took two or more antipsychotic medications concurrently, use of traditional Chinese medications during the admission (yes or no), and use of ECT during the admission (yes or no). 3) Outcome variables included the therapeutic outcome recorded by the treating clinician on the discharge note (full recovery versus other), the total cost of the admission (including room and board charges, fees for investigations, and all treatment charges), and the mean daily cost of the admission.

The relationship of insurance status, time period, and the interaction between insurance status and time period with each of these characteristics was assessed by using analysis of variance (ANOVA) for continuous variables and logistic regression for categorical variables. Separate logistic regression models, with insurance status or time period as the dependent variable and different groups of characteristics as independent variables, were used to assess the overall relationship of the three groups of characteristics and the independent relationship of each characteristic (after adjustment for the other characteristics) to insurance status and time period. All reported p values are for two-tailed tests.

Background data on the health care system and on the income level of Chinese citizens were obtained from annual statistical reports published by the Chinese government (7–10). All costs are shown in renminbi (RMB), which fluctuated in value from \$0.36 (U.S.) in 1984 to \$0.17 (U.S.) in 1993.

RESULTS

Table 1 shows that after adjustment for the effect of the time period, major differences remained in demographic, treatment, and cost characteristics between the 129 insured patients (40%) and the 192 uninsured patients (60%). Compared to the uninsured patients, the insured patients were older and were more likely to be married, to be urban residents, and to have 7 or more years of education. The insured patients also had more hospitalizations, a longer duration of illness, and, somewhat surprisingly, a later age at onset. The insured patients had a longer index admission than the uninsured patients, resulting in a greater total cost of hospitalization despite a similar daily cost. The mean daily chlorpromazine-equivalent dose of medication was similar for the insured and uninsured patients, but the insured patients were more likely to receive multiple antipsychotic medications concurrently (polypharmacy) to achieve this dose. And the insured patients were more likely to receive traditional Chinese medicines but less likely to be given ECT.

Table 2 shows that after adjustment for the effect of insurance status, the only statistically significant change in the demographic and prior treatment characteristics of admitted patients over time was an increase in the proportion of patients who had 7 or more years of schooling. Despite the similarity of the patients over time, the length of stay, the costs of care, and the treatments received changed dramatically. The mean length of stay decreased for both insured and uninsured patients, but the decrease was much more rapid among the uninsured (resulting in a significant insurance-by-time interaction). Despite the decreased length of stay, the total cost of the admission increased dramatically due to much higher daily costs in the 1989–1993 time period; the more rapid rate of increase in total costs for insured patients (because of their much longer stays and slightly higher daily costs in the second time period) resulted in a significant insurance-by-time interaction. Over the two time periods, the mean daily chlorpromazine-equivalent dose decreased, the proportion of hospital days on which multiple antipsychotic medications were used increased, and there was almost a two-fold increase in the proportion of patients whom the

TABLE 1. Characteristics of Insured and Uninsured Chinese Schizophrenic Inpatients and of the Treatments They Received, 1984–1993

Characteristic	All Patients (N=321)		Insured Patients (N=129)		Uninsured Patients (N=192)		Analysis: Insured Versus Uninsured Patients ^a	
	Mean	SD	Mean	SD	Mean	SD	F (df=1, 317)	p
Age (years)	27.7	9.5	31.7	9.7	25.1	8.4	43.60	<0.001
Age at onset (years)	23.7	7.9	25.2	7.5	22.7	8.1	8.09	0.005
Duration of illness (years)	4.0	5.3	6.5	6.8	2.4	3.0	55.99	<0.001
Number of hospitalizations	2.2	1.9	3.1	2.5	1.5	1.0	61.50	<0.001
Length of stay (days)	55.9	35.9	66.4	42.5	48.9	28.6	22.57	<0.001
Daily dose in chlorpromazine equivalents (mg)	426	206	415	181	433	221	0.49	0.49
Percentage of hospital days on which two or more antipsychotics were used	25.8	34.9	31.7	38.3	21.8	31.9	5.63	0.02
Total cost of the admission (RMB) ^b	691	691	961	897	511	302	46.64	<0.001
Daily cost of the admission (RMB) ^b	13.0	9.2	14.1	9.5	12.3	9.0	2.30	0.13
	N	%	N	%	N	%	χ^2 (df=1)	p
Male gender	175	54.5	79	61.2	96	50.0	3.74	0.05
Urban resident	113	35.2	86	66.7	27	14.1	95.57	<0.001
Never married	171	53.3	56	43.4	115	59.9	8.71	0.003
≥7 years of schooling	228	71.0	108	83.7	120	62.5	17.06	<0.001
Given traditional Chinese medicines in hospital	119	37.1	66	51.2	53	27.6	19.28	<0.001
Given ECT in hospital	66	20.6	16	12.4	50	26.0	9.17	0.003
Concurrent use of two or more antipsychotics	170	53.0	78	60.5	92	47.9	4.47	0.04
Rated as fully recovered at discharge	126	39.3	56	43.4	70	36.5	1.15	0.28

^aThe effect of insurance status was assessed after adjustment for time period with the use of ANOVA (continuous variables) or logistic regression (categorical variables).

^bRMB=renminbi; value fluctuated from \$0.36 (U.S.) in 1984 to \$0.17 (U.S.) in 1993.

treating clinician rated as fully recovered at the time of discharge.

These differences are more pronounced when one compares the first year (1984) and last year (1993) of the 10-year time period. The mean length of stay for the insured patients *increased* from 51 days (SD=23) in 1984 to 76 days (SD=46) in 1993 ($t=1.76$, $df=27$, $p=0.09$), while the length of stay for the uninsured patients *decreased* from 57 days (SD=27) to 31 days (SD=15) ($t=3.04$, $df=30$, $p=0.005$). The daily cost of admission increased 7.1-fold, from 3.92 RMB (SD=1.33) in 1984 to 27.66 RMB (SD=10.45) in 1993; the increase was 5.5-fold for the insured patients (from mean=4.60 RMB, SD=1.43, to mean=25.22 RMB, SD=10.52) and 8.8-fold for the uninsured patients (from mean=3.48 RMB, SD=1.10, to mean=30.65 RMB, SD=9.95). The total cost of admission increased 7.7-fold, from 225 RMB (SD=135) in 1984 to 1,726 RMB (SD=1,277) in 1993; the increase was 9.5-fold for the insured patients (from mean=240 RMB, SD=108, to mean=2,289 RMB, SD=1,460) and 4.8-fold for the uninsured patients (from mean=215 RMB, SD=153, to mean=1,033 RMB, SD=449). The mean annual household income in Hubei Province was 2,106 RMB in 1984 (7) and 4,553 RMB in 1993 (8), so the relative cost of a hospital admission for the treatment of schizophrenia increased from 11% (225/2,106) to 37% (1,726/4,553) of annual household income over the 10-year period—a 3.5-fold increase.

Many of the characteristics we considered are closely

correlated, so logistic regression models were used to identify the most important relationships. Simultaneously considering seven of the demographic and prior treatment characteristics described in the Method section (age at onset was excluded because of redundancy with age at admission and duration of illness), we found major differences in the characteristics of the insured and uninsured patients ($\chi^2=151.09$, $df=7$, $p<0.001$), but there were no significant differences in the characteristics of the patients over the two time periods ($\chi^2=10.60$, $df=7$, $p=0.16$). Residence status ($\chi^2=50.27$, $df=1$, $p<0.001$), age at admission ($\chi^2=7.97$, $df=1$, $p=0.005$), education level ($\chi^2=6.32$, $df=1$, $p=0.01$), and number of hospitalizations ($\chi^2=5.83$, $df=1$, $p=0.02$) remained significantly different between the insured and uninsured patients after adjustment for other demographic and prior treatment variables.

Controlling for these seven demographic and prior treatment variables by forcing them into the logistic regression models, we found a significant difference in the six treatment characteristics of the index admission (considered as a group) between the insured and uninsured patients ($\chi^2=17.59$, $df=6$, $p=0.007$) and between the two time periods ($\chi^2=40.41$, $df=6$, $p<0.001$). After adjustment for demographic and all other treatment variables, length of stay ($\chi^2=8.08$, $df=1$, $p=0.005$) and use of traditional Chinese medications ($\chi^2=4.68$, $df=1$, $p=0.03$) remained significantly different between the insured and uninsured patients; and length of stay ($\chi^2=19.03$, $df=1$, $p<0.001$), proportion of the admission in

TABLE 2. Characteristics of Insured and Uninsured Chinese Schizophrenic Inpatients Admitted to a Hospital From 1984 to 1988 and From 1989 to 1993

Characteristic	Insured Patients				Uninsured Patients				Analysis ^a			
	1984–1988 (N=62)		1989–1993 (N=67)		1984–1988 (N=102)		1989–1993 (N=90)		1984–1988 Versus 1989–1993		Insurance- by-Time Interaction	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	F (df=1, 317)	p	F (df=1, 317)	p
Age (years)	32.2	10.0	31.2	9.4	25.9	9.2	24.1	7.3	2.25	0.14	0.14	0.71
Age at onset (years)	25.0	7.6	25.4	7.4	23.6	9.1	21.7	6.7	1.23	0.27	1.71	0.19
Duration of illness (years)	7.3	7.7	5.8	5.8	2.3	2.8	2.5	3.1	0.90	0.34	2.00	0.16
Number of hospitalizations	3.3	2.8	2.9	2.2	1.5	1.1	1.6	0.9	0.49	0.49	1.59	0.25
Length of stay (days)	69.9	64.0	63.1	44.8	59.7	37.6	36.8	16.4	18.88	<0.001	4.39	0.04
Daily dose in chlorpromazine equivalents (mg)	465	187	368	163	443	200	423	244	4.97	0.03	2.71	0.10
Percentage of hospital days on which two or more antipsychotics were used	23.9	35.9	38.8	39.3	16.5	27.2	27.8	35.8	11.24	0.001	0.21	0.65
Total cost of the admission (RMB) ^b	545	414	1,353	1,044	374	220	668	306	66.68	<0.001	16.92	<0.001
Daily cost of the admission (RMB) ^b	7.9	5.5	19.9	8.9	6.8	5.6	18.6	7.9	225.96	<0.001	0.02	0.90
	N	%	N	%	N	%	N	%	χ^2 (df=1)	p	χ^2 (df=1)	p
Male gender	35	56.5	44	65.7	49	48.0	47	52.2	1.26	0.26	0.23	0.63
Urban resident	36	58.1	50	74.6	13	12.7	14	15.6	3.45	0.06	0.86	0.36
Never married	26	41.9	30	44.8	58	56.9	57	63.3	0.83	0.36	0.11	0.74
≥7 years of schooling	48	77.4	60	89.6	58	56.9	62	68.9	6.02	0.01	0.47	0.49
Given traditional Chinese medicines in hospital	36	58.1	30	44.8	32	31.4	21	23.3	3.76	0.05	0.07	0.79
Given ECT in hospital	9	14.5	7	10.4	26	25.5	24	26.7	0.04	0.83	0.48	0.49
Concurrent use of two or more antipsychotics	31	50.0	47	70.1	45	44.1	47	52.2	5.48	0.02	1.28	0.26
Rated as fully recovered at discharge	18	29.0	38	56.7	28	27.5	42	46.7	17.14	<0.001	0.46	0.50

^aThe effect of time period was assessed after adjustment for insurance status, and the insurance-by-time interaction was assessed after adjustment for time period and insurance status main effects with use of ANOVA (continuous variables) or logistic regression (categorical variables).

^bRMB=renminbi; value fluctuated from \$0.36 (U.S.) in 1984 to \$0.17 (U.S.) in 1993.

which there was concurrent use of multiple antipsychotic medications ($\chi^2=5.54$, $df=1$, $p=0.02$), and mean daily chlorpromazine-equivalent dose of medication ($\chi^2=5.17$, $df=1$, $p=0.02$) remained significantly different between the two time periods.

Adjusting for the six treatment characteristics of the index admission, we found the total cost of the admission and the daily cost of the admission to be higher for the insured patients than for the uninsured patients ($\chi^2=22.07$, $df=1$, $p<0.001$, and $\chi^2=6.67$, $df=1$, $p=0.01$, respectively); these costs were also higher in the 1989–1993 period than in the 1984–1988 period ($\chi^2=222.48$, $df=1$, $p<0.001$, and $\chi^2=189.47$, $df=1$, $p<0.001$, respectively). After adjustment for treatment characteristics and demographic and prior treatment variables, there was no significant difference between the insured and uninsured patients in the outcome recorded by the treating clinician ($\chi^2=0.001$, $df=1$, $p=0.98$), but the proportion of patients considered fully recovered was significantly higher in the 1989–1993 period than in the 1984–1988 period ($\chi^2=14.76$, $df=1$, $p<0.001$).

DISCUSSION

The cases included in this study were randomly selected from those of all patients discharged from Shashi Psychiatric Hospital between 1984 and 1993, and the data used in the analysis are objective variables that were readily identified in all of the selected charts. The cases are, therefore, representative of patients seen in the hospital over this period, and the data obtained from their charts were relatively reliable. The patient mix, treatment patterns, and cost of care in this hospital are similar to those seen in acute-care psychiatric hospitals in China's small-to-medium-sized urban centers; such hospitals account for an estimated one-third of all psychiatric hospitals in the country and have a total of about 40,000 beds. The demographic and treatment characteristics of insured and uninsured patients in acute-care psychiatric hospitals in large urban centers (which have higher charges and a larger proportion of patients with comprehensive medical insurance) may be different from those found in this study.

No data are available on the household incomes of the included patients or on the incomes of the households with and without government health insurance, so the estimates of the relative cost of care were based on household incomes in the community at large. Given that families with a schizophrenic member typically have lower than average household incomes, the relative costs of care (as a proportion of household income) for Chinese families of schizophrenic patients are probably higher than those reported in this article.

What Do These Results Tell Us About Psychiatric Care in China?

To our knowledge this is the first systematic study of the provision of inpatient psychiatric services in China over time. In the absence of similar data from other institutions across China, the interpretation of the findings necessarily relies on the experience of the authors, who have worked as clinicians and researchers in China for a total of 27 years.

The high proportion of schizophrenic patients in this sample (64%) is typical of Chinese psychiatric hospitals. The limited number of psychiatric beds in China and the intense stigma associated with mental illness discourage persons with nonpsychotic disorders from seeking inpatient care. The proportion of our sample who had medical insurance (40%) is much higher than the estimated 19.3% of all schizophrenic individuals in the community who have comprehensive medical insurance. (We arrive at this estimate by applying the urban and rural rates of insurance in the general population reported by Henderson et al. [11] to the 1990 urban and rural population [12] and adjusting this for the different prevalence rates of schizophrenia in urban and rural China [13].) Thus, the 19.3% of all schizophrenic individuals in the community who are insured account for 40% of all psychiatric admissions of schizophrenic patients (i.e., they are overrepresented in inpatient settings), while the 80.7% of uninsured schizophrenic individuals in the community account for only 60% of all admissions. On the basis of this difference, insured schizophrenic patients receive inpatient treatment 2.8 times $[(40\%/19.3\%)/(60\%/80.7\%)]$ more frequently than uninsured schizophrenic patients.

Traditional Chinese medicines were given to 37.1% of our sample, but they are used as "restorative" tonics or adjunctive agents to treat the side effects of antipsychotics, not as the primary treatment for psychosis. The 25% markup for traditional Chinese medicines sanctioned by the state (the markup is only 15% for Western drugs) has induced hospital administrators to encourage clinicians to prescribe these drugs as a means of increasing hospital income. Chinese clinicians use ECT with schizophrenic patients much more commonly than their Western counterparts (20.6% of our patients received ECT); they view ECT as a treatment modality particularly helpful for agitated patients and for hastening recovery, a belief that is also held by clinicians in other developing countries (14).

The proportion of schizophrenic patients who were given multiple antipsychotics concurrently at some point during the hospital stay (53.0%) is higher than that reported by Baldessarini et al. (15) for Western inpatients (46.0% in 1989 and 24.4% in 1993), and the proportion of the hospital time in which multiple antipsychotics were used concurrently (25.8%) is much higher than that reported by Baldessarini et al. (1.7% in 1989 and 5.7% in 1993). In the West, short-term polypharmacy is usually the result of overlaps in the sequential application of individual agents as the patient is converted from one agent to another, but in China polypharmacy is much more likely to be a deliberate treatment strategy based on the unproven belief that combining drugs produces additive benefits. The three most commonly prescribed antipsychotic combinations are chlorpromazine and perphenazine, chlorpromazine and clozapine, and chlorpromazine and trifluoperazine.

Differences Between Insured and Uninsured Patients

There are major differences in the characteristics of insured and uninsured schizophrenic inpatients and in the treatments they receive. After controlling for potentially confounding factors, we found that insured schizophrenic inpatients were more likely to be urban residents, to be older, to have a higher level of education, and to have had more psychiatric hospitalizations; moreover, their index admission was longer, more expensive, and more likely to include the use of traditional Chinese medications.

Some of these differences are related to the method of obtaining health insurance benefits in China. Comprehensive health insurance that includes coverage for psychiatric hospitalization is provided to employees in government institutions and to workers in factories or mines that are directly supported by local or regional governments. Most of these institutions and enterprises are situated in cities, and the jobs they provide are of relatively high status, so they attract persons with higher levels of education. Urban residents who first fall ill at an early age (while still students or awaiting job placement) are often unable to compete for these government-based jobs, so they do not obtain comprehensive health insurance. Insured patients are more likely to have first fallen ill at a later age (*after* obtaining a government-based job), and thus their age at admission remains greater even after adjustment for duration of illness, number of hospitalizations, and other demographic factors.

Given the estimate that insured patients in the community receive inpatient care 2.8 times more frequently than uninsured patients, it's not surprising that the mean number of hospitalizations was greater for insured patients (3.1 versus 1.5 admissions), a difference that remained significant even after adjustment for duration of illness, age at admission, and other demographic variables. Families of uninsured patients may be willing to bear the high cost of the patient's first hos-

pitalization in the hope of curative treatment, but they are reluctant to make similar financial sacrifices for subsequent relapses.

The longer stay and higher daily cost and total cost of admission of insured patients is directly related to their greater ability to pay. Given their relatively high cost, traditional Chinese medicines are an optional treatment modality that clinicians primarily use for patients who can afford the additional charges, that is, insured patients.

Changes Over Time

Despite little change in the demographic and prior treatment characteristics of schizophrenic inpatients over time, there have been major changes in the treatments provided and in the costs of care. After adjusting for potentially confounding factors, we found that compared to admissions from 1984 to 1988, admissions during the 1989–1993 period were shorter (particularly for uninsured patients), had higher daily costs, had higher total costs (particularly for insured patients), involved longer periods of polypharmacy with multiple antipsychotic medications, used lower mean chlorpromazine-equivalent doses of medication, and were more likely to result in a full recovery (as assessed by the treating clinician at the time of discharge).

The World Bank's study on China's health care system during the economic reform era (16) described how many hospitals responded to increasing pressure to generate revenue by linking clinicians' bonuses to the profit generated by the wards on which they practiced. One of the primary sources of a ward's profit is the 15%–25% markup for prescribed medications, so the changed incentive system has been associated with changes in clinicians' prescribing practices and with increased polypharmacy. The excessive and often inappropriate use of medications is an increasingly serious problem in China's hospital sector: nationally, medications constituted 52% of total inpatient revenue for all general hospitals in 1993 (10). Given China's new patent law (17), which recognizes newly registered patents for expensive imported drugs, this trend will probably continue.

The decrease in the mean daily chlorpromazine-equivalent dose of medication occurred at the same time as the increase in polypharmacy with multiple antipsychotic medications. This decrease in mean dosage is largely due to the increased use of clozapine (a low-potency drug) and the use of lower doses of high-potency drugs over the 10-year period. These trends in the use of drugs will be described in a subsequent paper.

Another example of the effect of economic reforms on clinicians' behavior is the huge increase over time in the proportion of schizophrenic inpatients rated as fully recovered at discharge (from 28% to 51%). As part of the reform process, hospital administrators were pressured by health officials to improve the economic efficiency of their institutions, but they were not given specific guidelines about how to do this, so they experi-

mented. Starting in 1991, the Shashi Psychiatric Hospital tried to improve clinicians' "productivity" by linking ward physicians' salary bonuses to the proportion of full-recovery discharges. Given that bonuses over this period constituted one-third or more of total physician income, this incentive system led to a dramatic increase in the proportion of "fully recovered" patients. In the absence of independent clinical evaluations, it is impossible to prove that the improved outcomes were not real, but given the persistence of a significant increase in full-recovery discharges over time after adjustment for demographic and treatment characteristics, it is quite unlikely that the dramatic improvement in outcomes was the result of changes in patient mix or improved treatment methods.

The rate of increase in the daily cost of an admission over the 10-year period has been much faster for uninsured patients than for insured patients (8.8-fold versus 5.5-fold), because most hospitals have stopped the earlier practice of charging uninsured patients one-half of the full charge for services. The 3.5-fold increase in the relative cost of inpatient care is primarily a problem for low- and middle-income families of uninsured patients; families of insured patients pay only a small copayment (0%–15% of the total charge), and high-income families of uninsured patients are wealthy enough to pay for the full range of services. Unable to meet the higher charges, many families of uninsured patients are reluctant to seek hospitalization until the symptoms have become unmanageable, and they urge hospital clinicians to discharge the patient as soon as possible. Families of insured patients, on the other hand, are more likely to seek inpatient care early, and clinicians are motivated to extend insured patients' hospitalizations, since this will maintain a high hospital census (and high clinician bonuses).

The shorter stays of uninsured patients do not necessarily imply poorer outcomes. However, unlike Western countries where reductions in inpatient hospitalization are partially compensated for by outpatient services, China has yet to develop an effective community network of mental health services. Psychiatric outpatient services provided at psychiatric hospitals (and a very few general hospitals) do little more than refill prescriptions, and community-based psychiatric rehabilitation services are primarily limited to a few large urban centers such as Shanghai (18). For the vast majority of schizophrenic patients, inpatient care, if available, is the most important part of treatment.

Lessons for the West

In China's pre-reform era, government subsidies and regulations ensured low charges for health services; even though most citizens did not have government-sponsored insurance, the availability of services was fairly equitable because of their low cost (although there were major differences between urban and rural services). Economic reforms stimulated consumer demands for improved quality and an expanded range of

health services. This forced the government to choose among three options: 1) limit the expansion of services, 2) increase subsidies to meet the additional costs, or 3) relax the regulations that control costs. Concerns about the drain of welfare services on the national purse led Chinese health officials to relax the controls on costs. The result of this policy is the evolution of a two-tier system of health care that provides extensive services to rich, insured citizens and limited, lower-quality services to relatively poor, uninsured citizens. As the relative costs of care increase, the gap in the quality and quantity of services available to the two types of consumers increases. This report provides evidence that validates the concern of some Western practitioners who argue that an excessive emphasis on privatization and profitability in the health sector will lead to decreased access to care, a reduction in the overall quality of services, and, ultimately, a lower level of public health.

The Chinese are actively experimenting with methods of improving the economic efficiency of their hospitals while maintaining some level of quality assurance, although the former is at present much more important than the latter. The dramatic and, we believe, unrealistic increase in full-recovery discharges that followed the Shashi Psychiatric Hospital's attempt to link therapeutic outcomes at the time of discharge to physicians' income confirms the need for external evaluation of financial incentive systems. Determining remuneration on the basis of therapeutic outcome rather than treatment inputs is a theoretically attractive approach, but it is bound to fail if the clinicians themselves make the judgments about outcome. The attempts of Western health insurance managers to encourage desired practices by changing fee schedules often suffer similar weaknesses. The success of any financial incentive system to change physicians' behavior in desired directions depends on the existence of a high-quality and independent monitoring system.

In China, as in the West, privatization, user fees, and the merchandising of health services have been heralded as good methods of alleviating deficits in the national budget. But the demand for fiscal responsibility and accountability must be balanced by the realization that the care and treatment of chronic illnesses such as schizophrenia may be inherently unprofitable. The economic reforms in China have unleashed a preoccupation with materialism that has affected all segments of the population, including physicians. These aspirations are understandable, but they have sanctioned the invasion of material considerations into areas of clinical decision making to an unprecedented degree. As illustrated by the Chinese experience, when new economic policies are implemented without parallel restructuring

of the existing social welfare support system, there can be dire consequences for the most disadvantaged groups. In the West the state has the dual role of promoting economic efficiency while protecting patients' interests, so Western countries have developed mechanisms to minimize the negative effects of market forces on health care. These types of regulating agencies have not yet evolved in China. The danger for the West is that the current focus on privatization and profitability will result in a decreased monitoring role for the state at a time when such monitoring will be needed the most. The anxiety about balancing budgets could, as in China, foster an acceptance of the decreasing social and public obligations to the mentally ill and legitimize their exclusion from the protective network of society.

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