Health care in China: a rural–urban comparison after the socioeconomic reforms

Leiyu Shi

This article provides an overview of the current Chinese health care system with particular emphasis on rural–urban differences. China's post-1978 economic reforms, although they improved general living standards, created some unintended consequences, as evidenced by the disintegration of the rural cooperative medical system and the sharp reduction in the number of "barefoot doctors", both of which were essential elements in the improvement of health status in rural China. The increase in the elderly population and their lack of health insurance and pensions will also place enormous pressure on services for their care. These changes have disproportionately affected the rural health care system, leaving the urban system basically intact, and have contributed to the rural–urban disparity in health care. Based on recent data the article compares current rural–urban differences in health care policy, systems, resources, and outcomes, and proposes potential solutions to reduce them.

Introduction

With a population of 1130 million in 1990, China is the world's most populous country, accounting for 21% of the global population and for 28% of those living in developing countries. (1–2). China is also the largest agricultural country in the world with over 70% of its population living in rural areas. Since 1949, when the People's Republic of China was established, improved social conditions and health services have given the Chinese people vastly improved health status. The near doubling of life expectancy from 1949 to the present years (from 35 years to 69 years) has put China on a par with developed countries (3). Overall mortality has fallen from 25 to 6.6 per 1000 population. Infant mortality has also declined markedly from 200 to 34.68 per 1000 live births, which compares favourably with the average for developing countries of 92 per 1000 live births and the average global level of 81 per 1000 live births (4–6). Many features of China's health policy and system have been embodied in WHO's principles for community-oriented primary health care and its call for health for all by the year 2000 (7, 8).

Despite these significant achievements, China is facing new problems. From a social policy perspective, changes in the health care system not only reflect health reform measures but also the impact of the general economic reforms. China has now experienced three decades of Maoist-style Communism and one-and-a-half decades of economic and structural reform since 1978. This economic reform has dismantled many aspects of China's Maoist health and medical system, including the cooperative medical system in rural areas (9, 10). Demographically, aging of the population presents a major challenge; 90 million people are aged over 60 years (8.59% of the population) and this is expected to increase to 130 million (11% of the population) by the turn of the century (11–13). Population aging and the continued growth of the population put significant demands on health care resources. In addition, health care costs have increased dramatically. A recent survey of hospitals from 13 provinces found that medical costs have increased by 30–50% annually since the economic reforms (14). These escalating medical costs were ascribed to a number of factors, e.g., inflation and the fact that health care providers were disadvantaged by price reforms that increased their costs but continued to freeze the charges they were allowed to make to patients and insurers (15). The charges for outpatients, inpatients, and medical operations account, on average, for 29%, 63% and 40%, respectively, of the actual costs of these services (16).

These problems interact and exacerbate the disparity between rural and urban health. During the 1980s, the rural people's communes were dismantled, as was the cooperative medical system, which was organized and highly subsidized by the production brigades under the communes. Today, in most

1 Assistant Professor, Department of Health Administration, School of Public Health, University of South Carolina, Columbia, SC 29205, USA.
2 Since 1984, the criteria for what constituted an urban locale were changed, and in the following years, the proportion of the population defined as urban rose considerably. Thus, in most cases, people who live in county seats and in many smaller towns are now classified as urban residents. The problem is that the Ministry of Public Health has been slow to follow suit in their own data-keeping, and since the statistics from the Ministry of Public Health are mainly relied upon, the old definition of urban locale is used in this article.

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reviews in health and parity. The First National Health System describes the health care resources needed (e.g., medical care) has already been preserved in some rural areas (17), although urban residents are more or less covered by state insurance because of work-related benefits.

Over 80% of the elderly in China live in rural areas (18). Unlike most of the urban elderly, who generally receive a pension of 70–80% of their final salary when they retire, the rural elderly are mostly agricultural farmers, primarily dependent on their children and savings for old-age support (19). As the size of families becomes much smaller owing to strict family planning policy, and family members migrate to urban areas, the future care of the rural elderly in China is of great concern (20–22). The aging of the rural population will also mean aging within the elderly group. Of today’s rural population aged 65 years, 70% are aged <75 years; in the future, however, an increasing proportion of the elderly will be older and more frail (23–25). Today’s systems of rural support for the elderly and rural medical care are inadequate to cope with these projections.

The present article provides an up-to-date overview of the current Chinese health care system, with a special focus on rural–urban differences. Much of the information in this article is based on data published over the last ten years or identified in Ministry of Public Health internal documents. Since China did not regularly publish information on its health care system until the 1980s, the data presented here may not be complete.

The “systems model” of health services is used to organize the article (26). The “inputs” component of the systems model represents the health care resources (e.g., health care professionals and institutions) needed to generate the “outputs” (i.e., to improve the health status of the population and access to care). The mechanism that converts the inputs to outputs is termed “the health care system”, which is affected by the “external environment” representing health care policy. Thus, the article first reviews current Chinese health care policy and then describes the health care system; subsequently, health care resources and outcomes are dealt with. The article concludes by summarizing the current major problems that exacerbate the rural–urban disparity in health and by discussing potential solutions.

Health care policy

The First National Health Conference in 1950 promulgated the general health care guidelines as “serving workers, peasants, and soldiers; putting prevention first; and developing both Western and traditional medicine” (27). In view of China’s large agricultural population, it is not surprising that the first guideline emphasized the need to serve rural peasants along with urban workers. In 1965, Chairman Mao called upon the Ministry of Public Health to make concerted efforts to promote rural health care (28, 29). As a result, urban doctors en masse were regularly sent to rural areas, and paramedics were trained and developed into “barefoot doctors”. A cooperative medical system, i.e., a system under which the village collective ran and financed the clinics, paying the barefoot doctors to provide medical care to the villagers, became the dominant health care system at the grass-roots level (18). Medical expenditures at higher levels could also be reimbursed up to a certain percentage.

Since 1978, China has entered into a new era of post-Mao socialism. The basic tenets of health care policy developed over the previous three decades remained intact. The three most important principles for health development laid out for the 1980s reflect this policy continuation:

- to consolidate and improve further both urban and rural primary health care services;
- to put into effect the principle of “prevention first” and reinforce disease prevention and control; and
- to develop and promote traditional Chinese medicine and its integration with Western medicine.\(^b\)

The remaining principles showed additional emphasis on the health care required by the country’s demographic and economic environment and included the following:

- to develop maternal and child health and enhance family planning technical guidelines;
- to advance medical education and accelerate personnel training;
- to intensify and facilitate biomedical research;
- to improve health management by training management personnel and upgrading managerial skills.\(^b\)

The emphasis on rural health was also reflected in the specific objectives of the Seventh National Five-year Health Plan (1986–1990), listed below (30).

1) To improve the quality of drinking-water, and make safe drinking-water available for 80% of the rural population in coastal and developed areas by 1990.

2) To stress the prevention and treatment of viral hepatitis, scarlet fever, rabies, malaria, and tuberculosis, and expand immunization coverage to 85% of all children at the provincial level by 1990.

3) To popularize contemporary methods of child delivery and strive to reduce further the death rates of infants.

4) To increase the number of hospital beds by 400,000.

5) To strengthen health services in the county hospitals and encourage multiform village clinics.

6) To increase the number of hospital beds by 80,000 for traditional Chinese medicine and develop ethnic medicine.

7) To ensure that 150,000 new medical graduates enter the medical service each year.

8) To reform institutional employment and management.

9) To tighten supervision and control over pharmaceutical products.

10) To expand international cooperation.

Although objectives 1, 3, and 5 specifically dealt with rural areas, health policy in the 1980s and 1990s was also affected by a change in socioeconomic policy that emphasized individual efforts. In particular, the production responsibility system in agriculture, which was introduced as a replacement for the commune work-point system, necessitated changes in the arrangements for paying village barefoot doctors (18, 31, 32). The responsibility system transferred responsibility for agricultural production from the collective to the household level. Under the work-point system, the collective had to meet a state crop quota; profits from any excess production went to the collective, which provided for education, food relief, and subsidies to martyrs' and servicemen's families, in addition to health care (33). Under the responsibility system, each household must deliver a quota of crops to the state for a low, fixed price; any excess crops are then sold at the market price with the profits going to the individual household. As a result, there was little money left for the collective to pay for services and in many places the village doctors became fee-for-service practitioners. Government subsidies for preventive and health work contributed only 1–2% of doctors' incomes (32). As a result, most of the cooperative medical system disintegrated and many village clinics closed. A national survey showed that in 1986 only 9.5% of the rural population was covered by cooperative medicine, compared with 90% in 1978 (34). As a result of these changes, many peasants now pay an increasing proportion of their medical costs on a fee-for-service basis.

Another impact of the economic reforms was its emphasis on technology. Urban hospitals bought expensive medical equipment (e.g., computed tomography scanners) without any regional coordination of their activities. In the rural areas, a uniform examination was established in the mid-1980s for all barefoot doctors (34, 35). All those who passed the examination were given the new title of "country doctor" and licensed to practice medicine; those who did not pass became farmers.

Comparison of health care policy in the pre- and post-1978 periods therefore shows that while the Chinese government basically espoused health care principles that built on the rhetoric of earlier policies, substantial changes have occurred in rural health policy since 1978. Specifically, the fee-for-service system has replaced the cooperative medical system and collectively employed barefoot doctors became private practitioners. The change in rural health policy in turn has affected the health care delivery system, which is discussed below.

**Health care in China: an urban-rural comparison**

Fig. 1 displays schematically the current Chinese health care system (30, 36–41). The State Council, the executive branch in China, has direct jurisdiction over the nation's 30 provinces, municipalities, and autonomous regions. Directly below the provincial level is the county government, which supervises the township government, formerly known as the people's communes. The lowest administrative level is the village, formerly known as the production brigade, which is under the supervision of the township. On average, each province has 71 counties, each county 25 townships, each township 14 villages, and each village a population of 1000.

Parallel to the administrative system is the health care system. Each county or higher level of government has its functional public health unit, which is under the dual control of the corresponding governments and the public health units at a higher administrative level. Every level of government runs hospitals and other specialized health institutions that are directly supervised by the corresponding public health unit. In general, hospitals at the provincial level and above are viewed as urban hospitals and those at the county level and below as rural hospitals. The township health centres are general health institutions operated by the township government and supervised by the county department of public health. Village clinics represent the grass-roots level of the health care system, and are run by the village residents committees and supervised by the township health centre.
The principal levels of the rural health system are the village, township, and county. The village clinic is the primary source of care for most rural residents and accounts for half of the rural institutions (42). Such clinics are staffed by village or country doctors (formerly the barefoot doctors) who provide preventive services, maternal and child health services, and simple outpatient care to village residents, mostly on a fee-for-service basis. The township health centre is staffed by assistant doctors with two years of medical education beyond junior high school, and provides treatment for routine conditions as well as supervising the work and training of village doctors. The county hospital usually represents the top of the rural referral system, providing a full range of medical and surgical services, and is staffed by college graduate physicians. The county hospital also provides training for health workers at the lower levels. In 1990 there were 2256 county hospitals, 47,000 township health centres, and 638,580 village clinics in China (3). Every county has at least one hospital, 88% of the townships have a health centre, and 87% of the villages have a clinic.

The post-1978 economic reforms brought one major change to the rural health care system. Previously, the central government collected all revenues and allocated a portion to the local government, but now only finances institutions directly under its control such as national hospitals, research institutes and medical schools (36). Each province and lower levels of government are responsible for their own health care services, thus accentuating the already uneven distribution of health care services between rural and urban areas. With dwindling financial support and limited sources of funds, the health services in some poorer counties and townships have become less prevention-oriented, and prevention programmes are being withdrawn from the township health centres that traditionally provided both preventive and patient services (43).

The urban areas are mainly served by provincial hospitals (tertiary care facilities) (44). Other urban health care facilities include city hospitals, army hospitals, work unit hospitals, street hospitals, and local clinics; these facilities primarily serve urban residents but well-to-do-rural people can receive treatment on a fee-for-service basis. Following the economic reform, and specifically the introduction of the responsibility system, urban hospitals have implemented a system of personal responsibility, in which the tasks of each type of health professional are clearly defined and specified and have issued quality-quantity standards. Health professionals are rewarded for exceeding the standards and fined for being unable to meet them; the reward bonus can represent 50–100% of their monthly salaries (45). A similar responsibility system is also being encouraged in rural hospitals because of the chronic under-utilization of rural hospital beds (the occupancy rate in urban hospitals averages 85–90% but is <50% in rural hospitals). A recent survey of county hospitals and township health centres showed that, on average, they experienced an annual loss of 10,400 yuan (ca. US$ 2500), with an average occupancy rate of 43.8%
The responsibility system has raised the productivity in urban hospitals, but also widened the economic gap among health professionals, particularly between the rural and urban sectors.

Private practices have appeared in both rural and urban areas. The village clinics, which were owned by the collectives, are being transformed into private practices. In 1989, fee-for-service private clinics accounted for 59.4% of all village clinics, of which 11.1% were group private practices and 48.3% individual private practices (37). In the cities, there were 164,000 private doctors in 1989 (3.4% of all urban doctors) (46), most of whom had retired or resigned from public hospitals and had been permitted to set up their own clinics.

**Health care resources**

Table 1 compares the resources and health service utilization in rural and urban areas. The health resources and service utilization in urban areas are much greater than those in rural areas. The per capita national health service fund (NHSF) allocated by the government to the urban areas is 4.34 times the amount in the rural areas. The number of beds and the number of health professionals per 1000 population in the urban areas are 4.33 and 5.53 times, respectively, greater than those in the rural areas; also, the health service utilization rate and the expenditure for services are much higher in the urban areas.

China's national budget includes several items related to health care: the NHSF is the principal source for funding health services at different levels; the construction fund covers the building and renovation of hospitals and other health care institutions; the free medical service fund is used for medical relief and to assist the childless elderly and the disabled; and the medical education fund subsidizes medical education in national medical colleges. Between 1978 and 1988, the NHSF increased from 2242 million yuan (ca. US $1121 million) to 7186 million yuan (ca. US$ 1700 million) at an average annual rate of 12.4%; over this period the proportion that the NHSF represented of the national budget increased from 2.0% to 2.7% (46). Inclusion of other funds and of military health care expenditure increased the total national health care expenditure to 5–6% of the GNP.

There is a wide disparity of health care spending between rural and urban areas in China (47, 48). On average, the NHSF spends 9.80 yuan (ca. US$ 4.90) per urban resident per year, 4.3 times more than the amount per rural resident (2.23 yuan (ca. US$ 1.12)) (34, 49). Individual health spending is also higher in urban than rural areas. The average annual per capita health services expenses in urban areas are 52.13 yuan (ca. US$ 26.07), 2.8 times greater than in rural areas.

A similar disparity occurs in the distribution of health care institutions and professionals. In 1989, the average number of beds was 6.1 per 1000 people in urban areas, and 1.4 per 1000 in rural areas. The number of senior doctors was >3 per 1000 people in urban areas, but <0.5 per 1000 in rural areas (50, 51).

Since the 1978-reforms, the differences in resource allocation to rural and urban areas have increased. Table 1 shows rural–urban differences in hospitals, beds, and health professionals between 1985 and 1989. To gauge the size of hospitals, we used the ratio of beds per hospital; this is, however, an approximation since non-hospital beds were also included in the calculation. In general, urban hospitals were over three times larger than rural hospitals, with an average of 90 beds per hospital compared with 26 per rural hospital. The average size of rural hospitals remained constant over the period 1985–89, but there was a slight decrease in urban hospitals. While the number of urban hospitals increased steadily, the number of rural hospitals declined owing to closures caused by financial losses (45). The number of urban hospital beds increased from 4.6 per 1000 people in 1985 to 6.1 in 1989, but the number of rural hospital beds declined from 1.5 per 1000 people to 1.4 over the same period. A similar trend was observed in the number of health professionals, which increased at an annual rate of 4.5–6.6% in urban areas but declined in rural areas; in 1989, there were 12.6 health professionals per 1000 urban residents compared with 2.3 per 1000 rural residents.

Table 2 shows the developments that have taken place in the provision of rural health institutions, hospital beds, and health professionals in China since 1949. County hospitals continued to increase in size after the 1978-reform, regardless of whether this was measured by the hospital beds–hospital ratio, doctors–hospital ratio, or nurses–hospital ratio. The average size of township health centres appeared to increase when measured by the number of beds per health centre and the number of nurses per health centre, but decreased when measured by the number of doctors per health centre.

The number of county hospitals increased annually until 1980 and then declined. A similar trend was observed for township health centres, whose number started to decline after 1980, presumably

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(45). Because of substantial changes in the value of the yuan, the yuan/US$ exchange rate varies according to the year.
Table 1: Comparison of health service institutions, beds and health professionals between rural and urban areas of China, 1985–89

<table>
<thead>
<tr>
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<tbody>
<tr>
<td></td>
<td>Urban</td>
<td>Rural</td>
<td>Urban</td>
<td>Rural</td>
<td>Urban</td>
</tr>
<tr>
<td>Hospitals</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>No.</td>
<td>10 690</td>
<td>48 924</td>
<td>11 183</td>
<td>48 510</td>
<td>12 384</td>
</tr>
<tr>
<td>Annual change (%)</td>
<td>4.6</td>
<td>-0.9</td>
<td>10.7</td>
<td>12.80</td>
<td>-2.2</td>
</tr>
<tr>
<td>No. per 100 000 population</td>
<td>5.15</td>
<td>5.90</td>
<td>5.32</td>
<td>5.77</td>
<td>5.64</td>
</tr>
<tr>
<td>Beds</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. per 10 000</td>
<td>96.30</td>
<td>126.60</td>
<td>103.30</td>
<td>126.40</td>
<td>112.70</td>
</tr>
<tr>
<td>Annual change (%)</td>
<td>7.3</td>
<td>0.2</td>
<td>9.1</td>
<td>1.1</td>
<td>-2.4</td>
</tr>
<tr>
<td>No. per 1000 population</td>
<td>4.64</td>
<td>1.53</td>
<td>4.92</td>
<td>1.50</td>
<td>5.29</td>
</tr>
<tr>
<td>No. per hospital</td>
<td>90.1</td>
<td>25.9</td>
<td>92.4</td>
<td>26.1</td>
<td>91.0</td>
</tr>
<tr>
<td>Health professionals</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. per 10 000</td>
<td>223.10</td>
<td>208.20</td>
<td>236.20</td>
<td>208.40</td>
<td>249.50</td>
</tr>
<tr>
<td>Annual change (%)</td>
<td>5.9</td>
<td>0.1</td>
<td>5.6</td>
<td>-0.7</td>
<td>5.6</td>
</tr>
<tr>
<td>No. per 1000 population</td>
<td>10.76</td>
<td>2.51</td>
<td>11.24</td>
<td>2.48</td>
<td>11.72</td>
</tr>
<tr>
<td>Urban–rural difference</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Hospitals (urban–rural)</td>
<td>-0.75</td>
<td>-0.45</td>
<td>0.18</td>
<td>1.22</td>
<td>1.87</td>
</tr>
<tr>
<td>Beds (urban–rural)</td>
<td>3.11</td>
<td>3.42</td>
<td>3.79</td>
<td>4.31</td>
<td>4.66</td>
</tr>
<tr>
<td>Hospital size (urban–rural)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beds</td>
<td>3.5</td>
<td>3.5</td>
<td>3.4</td>
<td>3.3</td>
<td>3.2</td>
</tr>
<tr>
<td>Health professionals (urban–rural)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. per 1000 population</td>
<td>8.25</td>
<td>8.76</td>
<td>9.29</td>
<td>9.85</td>
<td>10.33</td>
</tr>
</tbody>
</table>


b Includes nonhospital beds.

c Includes Western doctors, traditional doctors, nurses, health technicians, health aides, and administrators.
because of a time lag after the implementation of rural economic reforms. The number of hospital beds increased at a much slower rate after the reforms. Between 1949 and 1978, the number of county hospital beds increased by over 2600% (880% per decade). In the decade after 1978, the number of county hospital beds increased only by 29%, while the number of beds in the township health centres started to decline after 1980.

The number of health professionals at the county level increased after the 1978 reforms but declined at the township and village levels. As discussed above, the decline in the number of rural doctors may be attributed to changes in the financing system and...
strict practice standards. At the county level, the number of doctors, nurses, and administrators continued to increase after the reforms; however, at the township level, while the number of nurses increased, the number of doctors and administrators declined. Most of the reduction in village health professionals was due to the decrease in the number of barefoot doctors (estimated reduction rate, 18–33%) (9, 32, 52).

Investment in rural health resources increased dramatically after the revolution in 1949, but the rate of increase slowed noticeably after the 1978 reforms; moreover, the number of hospitals and health centres decreased significantly. Townsend and village-level health resources were affected most by the impact of the reforms, since the number of health care institutions and professionals were markedly reduced; this reduction could ultimately affect the health status of the rural population.

Health outcome

Current health conditions in China are very different from those that prevailed 40 years ago; instead of the threat of communicable and infectious diseases, China is now mainly confronted by chronic illnesses. Table 3 compares the mortality rates in 1988 for the leading causes of death in rural and urban areas; these causes accounted for >90% of all mortalities. While cancer and stroke were responsible for 42% of the urban deaths, respiratory diseases were the principal killer in rural areas, accounting for 25% of the deaths. The rural population was proportionally more likely to die from injuries and poisoning, tuberculosis, infectious diseases, and neonatal complications than their urban counterparts, who were more likely to die from heart diseases and cancer. In both rural and urban areas, males were more likely to die from cancer, injury and poisoning, digestive system diseases, neonatal complications, and infectious diseases than females, who were more likely to die from stroke, respiratory diseases, and heart diseases.

Table 4 shows selected measures of population characteristics, health status, and use of health resources in rural and urban areas of China. The average urban per capita income in 1989 was 1387.81 yuan (ca. US$ 328), 2.3 times higher than in rural areas. The urban population used more health resources: in 1986, compared with the rural population, they spent 2.8 times more per capita on health service expenses, having both more outpatient visits (4 per year per person versus 3) and inpatient-days (1.34 days per person per year versus 0.48). There were also more doctors (3 per 1000 population versus 0.98) and beds (6 per 1000 population versus 1.4) in urban areas, while the government spent 4.3 times more on health care in urban areas.

Although it is premature to make the generalization that the rural–urban disparity in health resources leads to differential health outcomes, it is clear that the urban population enjoys better health status than those who live in rural areas. For example, the urban infant mortality rate is 24 per 1000 live births, 60% lower than in rural areas; urban females live, on average, 4.5 years longer than rural females, and the life expectancy of urban males is 3.7 years longer than that of rural males.

Limited data are available to examine the changes that have occurred in health status since the 1978 reforms. However, according to the “two-per-

Table 3: Age-standardized mortality rates from leading causes in urban and rural areas of China, 1988

<table>
<thead>
<tr>
<th>Sequence</th>
<th>Cause of death</th>
<th>% of deaths</th>
<th>Urban areas</th>
<th></th>
<th>Rural areas</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>Male</td>
<td>Female</td>
<td>Total</td>
</tr>
<tr>
<td>1</td>
<td>Malignant neoplasms</td>
<td>21.41</td>
<td>24.28</td>
<td>18.05</td>
<td>25.70</td>
</tr>
<tr>
<td>2</td>
<td>Cerebrovascular</td>
<td>20.95</td>
<td>20.63</td>
<td>21.33</td>
<td>16.07</td>
</tr>
<tr>
<td>3</td>
<td>Respiratory diseases</td>
<td>15.41</td>
<td>14.74</td>
<td>16.19</td>
<td>15.04</td>
</tr>
<tr>
<td>4</td>
<td>Cardiovascular diseases</td>
<td>15.10</td>
<td>13.42</td>
<td>17.06</td>
<td>11.56</td>
</tr>
<tr>
<td>5</td>
<td>Injury and poisoning</td>
<td>7.87</td>
<td>8.31</td>
<td>7.36</td>
<td>11.41</td>
</tr>
<tr>
<td>6</td>
<td>Digestive system diseases</td>
<td>4.32</td>
<td>4.59</td>
<td>4.01</td>
<td>5.45</td>
</tr>
<tr>
<td>7</td>
<td>Neonatal complications</td>
<td>1.72</td>
<td>1.86</td>
<td>1.54</td>
<td>3.02</td>
</tr>
<tr>
<td>8</td>
<td>Genitourinary diseases</td>
<td>1.62</td>
<td>1.58</td>
<td>1.65</td>
<td>2.34</td>
</tr>
<tr>
<td>9</td>
<td>Endocrine, metabolic</td>
<td>1.59</td>
<td>2.05</td>
<td></td>
<td>2.20</td>
</tr>
<tr>
<td>10</td>
<td>Infectious diseases</td>
<td>1.49</td>
<td>1.66</td>
<td>1.29</td>
<td>1.27</td>
</tr>
<tr>
<td>11</td>
<td>Tuberculosis</td>
<td></td>
<td>1.86</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>91.48</td>
<td>92.93</td>
<td>90.53</td>
<td>94.06</td>
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Table 4: Comparison of health status and use of health resources between rural and urban areas of China

<table>
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<tr>
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<th>Rural</th>
<th>Urban</th>
<th>Urban/rural</th>
<th>Year</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population (%)</td>
<td>80.0</td>
<td>20.0</td>
<td>0.25</td>
<td>1986</td>
<td>a, b</td>
</tr>
<tr>
<td>Population aged ≥65 years (%)</td>
<td>6.0</td>
<td>5.0</td>
<td>0.83</td>
<td>1990</td>
<td>c</td>
</tr>
<tr>
<td>Infant mortality (per 1000 live births)</td>
<td>40.0</td>
<td>24.0</td>
<td>0.60</td>
<td>1981</td>
<td>d</td>
</tr>
<tr>
<td>Female life expectancy (at birth) (years)</td>
<td>66.2</td>
<td>70.7</td>
<td>1.07</td>
<td>1982</td>
<td>e</td>
</tr>
<tr>
<td>Male life expectancy (at birth) (years)</td>
<td>63.8</td>
<td>67.5</td>
<td>1.06</td>
<td>1982</td>
<td>e</td>
</tr>
<tr>
<td>Annual per capita income (yuan)</td>
<td>601.51</td>
<td>1387.81</td>
<td>2.31</td>
<td>1989</td>
<td>f</td>
</tr>
<tr>
<td>Health service fund per capita (yuan)</td>
<td>2.26</td>
<td>9.8</td>
<td>4.34</td>
<td>1986</td>
<td>a, b</td>
</tr>
<tr>
<td>No. of beds per 1000 population</td>
<td>1.40</td>
<td>6.06</td>
<td>2.69</td>
<td>1989</td>
<td>g</td>
</tr>
<tr>
<td>No. of doctors per 1000 population</td>
<td>0.98</td>
<td>3.01</td>
<td>3.07</td>
<td>1986</td>
<td>a, b</td>
</tr>
<tr>
<td>No. of outpatient visits per person (per annum)</td>
<td>3.0</td>
<td>4.0</td>
<td>1.33</td>
<td>1986</td>
<td>a, b</td>
</tr>
<tr>
<td>No. of hospital-days per person</td>
<td>1.48</td>
<td>1.34</td>
<td>2.79</td>
<td>1986</td>
<td>a, b</td>
</tr>
<tr>
<td>Health service expenses per person (yuan)</td>
<td>18.62</td>
<td>52.13</td>
<td>2.80</td>
<td>1986</td>
<td>a, b</td>
</tr>
<tr>
<td>No. of homes for the aged</td>
<td>28 532</td>
<td>8133</td>
<td>0.29</td>
<td>1988</td>
<td>h</td>
</tr>
<tr>
<td>No. of homes for the aged per 100 000 elderly</td>
<td>3.16</td>
<td>3.60</td>
<td>1.14</td>
<td>1988</td>
<td>h</td>
</tr>
<tr>
<td>No. of beds in homes for the aged</td>
<td>411 113</td>
<td>142 124</td>
<td>0.35</td>
<td>1988</td>
<td>h</td>
</tr>
<tr>
<td>No. of beds per 100 000 elderly</td>
<td>45.48</td>
<td>62.89</td>
<td>1.38</td>
<td>1988</td>
<td>h</td>
</tr>
<tr>
<td>No. of patients in homes for the aged (per annum)</td>
<td>324 716</td>
<td>109 493</td>
<td>0.34</td>
<td>1988</td>
<td>h</td>
</tr>
<tr>
<td>% of the elderly in homes for the aged</td>
<td>0.04</td>
<td>0.05</td>
<td>1.25</td>
<td>1988</td>
<td>h</td>
</tr>
</tbody>
</table>

d Improvements in living standards since the founding of the People’s Republic, China reconstructs, 30(11): 57 (1981).

A thousand-population" fertility survey that was carried out in China in 1988, the infant mortality rate declined sharply up to 1977, then stabilized for a full decade up to 1987 at approximately 40 deaths in the first year of life per 1000 live births (2, 54). The weakening of primary health care at the village and township levels where rural people receive most of their care may have affected antenatal care and the maternal and child health network the most, which would help to explain the lack of further improvement in infant survival after 1978. The Ministry of Public Health has reaffirmed that there are continuing problems with infectious and endemic diseases and a weak infrastructure for preventive and primary care in rural areas (10). Also, a recent study on China’s mortality trends noted that working-age males in rural townships have experienced significantly increased mortality owing to industrialization (54).

What is relatively clear is that access to health care has been adversely affected in rural areas. The reduction in the number of village health professionals and township health centres represents a major cutback of needed resources from which the rural population obtain their primary health care. Since 1978 China’s health system has shifted toward curative medical care and away from preventive activities (42, 43). The long-term health impact of such a shift is a cause for concern since China’s success in controlling infectious diseases and increasing life expectancy has been attributed to its emphasis on preventive programmes rather than curative health services (32, 37, 38).

Access to care is not only limited by resources but is modulated by insurance status or income. There is a major difference between urban and rural areas with respect to health insurance coverage (21,
In the urban areas, the government insurance plan, which is financed exclusively from the national budget, provides free outpatient and inpatient services to government employees, college teachers, and college students. In general, only the primary participants are covered and dependents receive no benefit entitlements. Workers and staff employed in state enterprises with more than 100 employees are insured by the labour insurance plan, which is financed exclusively by the enterprise, with no individual prepayments. This plan entitles primary participants to free health care for life and their dependents to 50% reimbursement of health care costs. Since most working people are employed either by the government or by state enterprise, most of the urban population has little financial constraints about seeking medical care. In recent years, some urban programmes have introduced cost-containment incentives to insurance programmes; for example, by introducing deductibles, co-payments, percentage of coverage, or monthly payments that recipients can use for medical care or keep if they are not ill. However, these innovations are based on the premise that recipients have access to essential medical care services.

In the rural areas of China health insurance has been organized through a cooperative medical plan with money being provided mainly from local collective welfare funds and supplemented by individual premium assessments. Beneficiaries are entitled to free or substantially reimbursable services and drugs at the village clinics and also at higher level referral centres. Since the implementation of the individual responsibility system, local collectives can no longer retain the surplus production output for public welfare services, such as financing cooperative medical care. Because the insurance provided through cooperative medical plans depends on the solvency of the local collective welfare fund, coverage has to be suspended or restricted when this fund is used up. Thus, the rural population, whose income, on average, is less than half that of the urban population, now has to pay to use medical services, increasing the financial burden imposed by illness.

The people most affected by these changes are the rural elderly. Currently, 6% of the rural population is over 65 years of age, compared with 5% in urban areas (see Table 4). Of the 36 665 homes for the aged, 78% are in rural areas, where >80% of the nation’s elderly live; 74% of the beds in these homes are in rural areas. The urban elderly are 25% more likely to stay in homes for the aged than their rural counterparts.

In urban areas, the elderly are more likely to receive retirement pensions ranging from 60% to 100% of their last wage, depending on their length of service and prior participation in activities during the revolution (18, 55–58). Medical insurance is also included as part of the retirement benefits provided by employers. In rural areas, only the childless elderly and the disabled are taken care of by the collective through a programme, called “the five guarantees”, which covers clothing, food, housing, medical care, and burial expenses (12, 59–62). Currently about 6% of the elderly enjoy these benefits. For the majority of the rural elderly who have neither medical insurance nor retirement pensions, the family is their predominant mode of support (63). Recent projections indicate that China will have a substantially older population in the middle of the 21st century (2, 11, 12, 64). The increase in the number and proportion of old people and the decrease in average family size because of the strict family planning policy will exert severe strains on the support of the elderly, particularly in rural China (2, 21, 65–69).

**Discussion**

While economic reforms in China have improved the general standard of living, they have also had some unintended consequences. The originally highly centralized health care system has been experiencing transformations brought about by the changes in the country’s administrative system and economic policy. Such transformations are characterized by the disintegration of the rural cooperative medical system and by a sharp reduction in the number of bare-foot doctors, both of which are essential ingredients to the improvement of health status in rural China. The increase in the costs of medical services in recent years owing to inflation, and the lack of health insurance among the rural population, will impose an economic burden on low-income individuals and affect their health status. Also, the increase in the elderly population and their lack of health insurance and pensions will place enormous pressures on services for their care. Unfortunately, these changes have disproportionately affected the rural health care system, leaving the urban system basically intact, and have contributed to the rural–urban disparity in health care that was reduced during the Maoist era (3, 8–10, 17, 18, 28, 32, 39, 70, 71). The Ministry of Public Health also recognizes this inequality in resource distribution and in access to services as one of the critical problems in the current health system (72, 73). The Seventh National Five-year Health Plan (1986–1990) includes as one of its ten objectives the strengthening of health services in the county hospitals and the encouragement of multi-form village clinics (30).

To reduce this rural–urban disparity, a number of policy concerns have to be addressed as discussed below.
• First, in terms of health resources, what is the most appropriate type of professional to provide rural primary health care? Currently in China, the three commonest health providers are as follows: senior doctors trained either in Western or traditional Chinese medicine, who have graduated after a five- or six-year course in medical school after completing high school; assistant doctors, who have had two years of medical education in a technical college beyond junior high school; and country doctors6 (former barefoot doctors), who have been educated to primary-school level and have completed 6–12 months of training in public health and primary health care, typically at a county hospital. Thus, it takes 17–18 years of formal education to train a senior doctor, 11 years for an assistant doctor, and less than 7 years for a barefoot doctor. Before the barefoot doctors are replaced by better-trained doctors, the relative cost-effectiveness of the latter at providing preventive and primary care services to the rural population needs to be determined. Health manpower training in China is still limited by its cost. The three-tier referral system that existed before the reform was built on the principle of efficient utilization of available health professionals. In the first tier, barefoot doctors provided educational, preventive, and primary care services. Patients with more serious diseases were referred to the second tier (formerly called the commune health centre), which was staffed primarily by assistant doctors. The most seriously ill patients were referred to the county hospital, where senior doctors were available. The advantages and disadvantages of such a referral system need to be studied and compared before changes to it are made. In addition, the recruitment and retainability of these professionals in rural areas need to be compared and taken into account. Regardless of what type of doctors are practising in rural areas, their income, which is mostly regulated by the government, should at least be comparable to that of the local population. Currently, rural doctors generally earn much less than capable, ambitious peasants, dampening their incentive to serve in rural areas.

• Second, what is the most appropriate method of health care financing — fee-for-service, or insurance, cooperative medicine or a universal, compulsory system? The fee-for-service approach is likely to increase the access gap between rich and poor. With the escalating health care costs that are expected to accompany a more market-oriented approach to health services delivery, the financial burden to care will be too great for most rural people and the incentive to seek preventive care will also diminish. Medical insurance is currently being tried in several well-to-do rural areas (15, 74–76) but its feasibility, acceptability, and manageability remain to be seen. In areas that are still poor, its applicability is certainly limited because peasants do not have sufficient income to pay for the premiums. If cooperative medicine is to be continued, peasants will have to contribute to the local welfare fund from their own harvest income. The psychological difficulty for peasants of having to spend money today on possible future benefits may dampen their enthusiasm for cooperative medicine, especially when they could spend their money on immediately tangible and appealing goods. A universal, compulsory system of financing health care therefore seems to be more appropriate. Such a system is also more likely to reduce the rural–urban and rich–poor differences in access to care.

• Third, there is an urgent need to develop a new support system for the elderly that takes into account the impact of family planning policy. The traditional family-based elderly support system is likely to be weakened since strict birth control will reduce both immediate and extended family relationships. To achieve the objectives of both family planning and elderly care, a non-family-based system that combines both medical care and pension assistance should be explored; otherwise, the future care of the rural elderly will be in jeopardy. Currently, collectively financed old-age support is being tried on an experimental basis in many rural areas at various levels, including the village, township, county, and region (77–86). Nine provinces are also currently experimenting with their own social security system that combines resources from the individual, work units, and the state (87); under this system, individuals contribute 2–3% of their income. The national government appears to be supporting a provincial-based, old-age support system. In addition to financial support, the demand for long-term care is expected to increase substantially as a result of population aging. The current homes for the aged, which are capable of accommodating 4–5% of the elderly, may be insufficient to meet the increasing demand caused by the increase in the elderly population and the decrease in family size.

These challenges have to be met before the rural–urban disparity in health care can be reduced and continued progress made in improving the health status of the population. In order to reach the targets

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6 A small number of country doctors have received about two years of training and internship at a county hospital. In general, younger country doctors are significantly more likely to have completed lower-middle or upper-middle schools and have had longer periods of training.
of health for all by the year 2000, which the Chinese government has endorsed, China has to structure a new system compatible with both the economic policy that emphasizes individual efforts and the health policy that stresses public health.

Résumé

Soins de santé en Chine: situation comparée des zones rurales et urbaines après les réformes socio-économiques

Cet article passe en revue le système actuel de soins de santé en Chine et souligne les différences entre les zones rurales et urbaines. Les réformes économiques entreprises après 1978, si elles ont amélioré le niveau de vie général, ont eu certaines conséquences imprévues, comme en témoignent la désintégration du système coopératif de soins médicaux en milieu rural et la réduction marquée du nombre de "médecins aux pieds nus", deux éléments essentiels de l'amélioration de la situation sanitaire en Chine rurale. Une pression énorme va s'exercer sur les services de soins aux personnes âgées, dont le nombre est en augmentation et qui ne bénéficient d'aucun régime d'assurance-maladie ou de retraite. Ces changements ont eu des effets disproportionnés sur le système de soins de santé en milieu rural, alors que le système urbain demeurait pratiquement intact, et ont aggravé la disparité entre les villes et les campagnes. L'article s'appuie sur des données récentes pour comparer la situation des zones rurales et urbaines en ce qui concerne les politiques, les systèmes, les ressources et les résultats en matière de soins de santé. Il propose aussi des solutions pour réduire les difficultés.

Un certain nombre de questions de politique générale doivent être examinées. Premièrement, il convient de décider quel est le type de professionnel de la santé qui est le mieux à même de dispenser des soins de santé primaires en milieu rural. Il faudrait aussi mieux rémunérer les médecins exerçant en zone rurale, car actuellement leur revenu est inférieur à celui de beaucoup de paysans.

Deuxièmement, il faudra déterminer la méthode la plus appropriée pour financer les services médicaux. Parmi les différentes approches envisagées, un système de financement obligatoire et universel semble préférable, car ce serait probablement la meilleure solution pour réduire les inégalités en ce qui concerne l'accès aux soins entre zones rurales et zones urbaines et entre riches et pauvres.

Troisièmement, il est urgent de mettre au point un nouveau système d'assistance qui tienne compte de l'impact de la politique chinoise de contrôle des naissances; en effet, celle-ci aura probablement pour conséquence d'affaiblir le système traditionnel d'aide aux personnes âgées fondé sur la famille. Un système indépendant de la famille, assurant à la fois les soins médicaux et une retraite aux personnes âgées vivant à la campagne, doit donc être étudié. D'autre part, le nombre actuel de résidences pour personnes âgées risque d'être insuffisant compte tenu de l'augmentation prévisible de la demande.

References

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