

# Health Care In China After Mao

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*This article summarizes observations made by the author during a recent trip to China and compares these views to those of other observers over the past decade. The discussion is undoubtedly influenced by the Chinese tendency to speak in terms of the ideal rather than what exists. It was often difficult to sort out "what is" from "what ought to be," even though our hosts appeared very candid, and, for the most part, our observations confirmed what we were told.*

*Interpretation of observations is also colored by China's new surge of leadership, which causes health care policies to be in a continual state of transition. This makes any paper on contemporary Chinese health care somewhat outdated by the time it is published. However, there appear to be larger concerns reflecting basic Chinese attitudes toward health care that have evolved during the post "Liberation" period and which underlie day-to-day policy fluctuations. The analysis which follows attempts to isolate basic trends from more transitory events to clarify the essential aspects of Chinese health care policy.*

## Introduction

During November and December of 1979, the National Health Policy Forum, a non-profit group affiliated with George Washington University, sponsored a health study tour of the People's Republic of China. Because the tour group was composed of health care professionals, the Chinese International Travel Service guided the group through six cities, allowing them to observe first hand numerous health-related activities. The group visited the following cities: Peking, the capital; Tsinan, a northern industrial city of about one million; Chu Fu, the rural birth place of Confucius just opened to western observers; Sou-Chow, a city of silk and canals; Shanghai, one of the largest cities in the world; and Canton, a subtropical city located 1,500 miles south of Peking. The group visited medical schools in Peking and Tsinan, a traditional teaching hospital in Shanghai, and residential, communal, and industrial health clinics in several cities. We also met with provincial level Ministry of Public Health officials in Canton and had numerous other opportunities to observe health care as practiced in the People's Republic of China.

This article explores several aspects of the Chinese health care delivery system. It begins with overviews of the issues which constitute contemporary Chinese health care policy and the planning process which guides the health care delivery system. I then discuss Chinese physicians in terms of their training, placement, and research activities and contrast traditional Chinese medical practices to those of Western medicine. The text then turns to "barefoot doctors" and their provision of primary health care services. A discussion of access and continuity of care follows, indicating the extent to which basic health care objectives have been achieved. An analysis

of health care financing issues closes the discussion on access to health care.

Family planning is next introduced as a separate topic, because of its importance to Chinese social policy. A broader discussion of prevention and public health issues follows. The final topic is the collection of health care statistics and measurements of health status. The paper concludes with an assessment of China's health care accomplishments and speculation about future health care dilemmas.

## Chinese Health Care Policy: The Development Of Political Mandates

This article diverges from recent reports on Chinese health care in that it reports much less political influence on day-to-day health care activities. Health care in China is now in a state of transition from the institutional chaos brought on by the Great Proletarian Cultural Revolution (GPCR) of the mid-1960s to the institutional rebuilding and technological advancement called for by China's new leaders.

Health care in China has been an important political issue since the "Liberation" in 1949. Health care was particularly important to the founders of the Chinese Communist Party because of the dismal conditions which prevailed before Liberation and the experiences and philosophies they acquired during the War of Liberation. Chairman Mao Tse-Tung's early interest in health was primarily related to rural areas and peasants. His guidance to the National Health Congress in 1950 was frequently quoted to us as constituting the basic political tenets of contemporary Chinese health care policy. In this early guidance Mao indicated the following:

- Medicine should serve the workers, peasants, and soldiers.
- Preventive medicine should be emphasized.
- Chinese traditional medicine should be integrated with Western medicine.
- Mass movements should be an integral part of China's health care.

These themes were reiterated and expanded upon by Mao in the mid-1960s during the GPCR. When we asked what goals China has set for health care in the 1980s, we were informed of the "Four Modernizations." This program, made public by Chou Enlai in 1975, proposed modernizing China in the areas of (1) agriculture, (2) industry, (3) science and technology, and (4) national defense by the year 2000. Chairman Hua Guofeng again asserted these principles in 1978 (Prybyla, 1980). While they are only indirectly related to health care, the Four Modernizations set the tone for modernization in all sectors of the economy. Indeed, not only were the goals of the Four Modernizations prominently exhibited on large billboards at busy intersections in the urban cities we visited, but our guides and hosts constantly reminded us of them.

Because residual effects of the GPCR are still evident in China, understanding current Chinese health care policy goals and objectives requires an exploration of the GPCR's impact on the formulation of China's health care policy over the last 30 years. The GPCR fostered debates concerning the role of science and intellectuals, the nature of social equity, and the impact of existing urban-rural resource allocation policies. While medicine was not the central issue, it was clearly related to the debates. Up to this point, the Chinese Ministry of Public Health had attempted to develop secondary and tertiary health care activities in urban areas which would support primary health care activities in rural areas. For numerous political and philosophical reasons, Mao took vigorous exception to this policy as part of his strategy to develop the GPCR and regain control of China's political and social development. In June 1965, the Ministry of Public Health was openly criticized by Mao, when he referred to the Ministry as the "Ministry of Urban Gentlemen's Health" and said that "the more books one reads the more stupid one becomes" (Lampton, 1977).

Approximately 80 percent of the Chinese population resides in rural areas. During the GPCR, the relationship between urban and rural distributions of resources and political power was re-examined. As a result, policies related to rural health were either newly developed or re-emphasized. The GPCR's agenda included the use of mobile medical teams, an increased emphasis on preventive services, the development of auxiliary medical personnel from local populations, a questioning of medical training policies and intellectuals in general, the increased use of mass campaigns, a rehedwed interest in birth control, and the decision to finance rural health care through cooperative health systems based on the rural commune structure. This strident emphasis on rural health care activities led to a significant re-distribution of health care resources to rural areas and continues to represent a major aspect of China's health care policy.

While travelers to China as recently as 1978 were indoctrinated with political messages at every stop, our group was exposed to very little Communist Party propa-

ganda. Chang (1978) indicates that the process of "de-politicalization" was initiated after Mao's death in 1976 by China's new leaders. Health affairs in China are thus dominated by the transition from political concerns to rebuilding an effective health bureaucracy and an expanded delivery system through systematic planning.

### The Planning Process

The policy and planning apparatus currently carries out Mao's and now Hua's and Zhao's directives in only the most general sense.<sup>1</sup> It makes decisions concerning capital construction, determines production quotas for medical personnel, decides research priorities, handles emergencies, and deals with preventive and environmental issues. Planning horizons vary from one to five years, depending on the complexity of the issues.

Health policy in China is directed by the leaders of the Chinese Communist Party and refined and planned in detail by various levels of an extensive bureaucracy headed by the Ministry of Public Health (Wei-Sheng-Pu). It extends down to all administrative divisions.<sup>2</sup> In this sense the current Chinese planning system is much like that of the U.S., in that a multi-layered governmental structure is called upon to resolve and implement national health care policy (for instance, our Medicaid program).

Oksenberg (1974) notes that the Ministry of Public Health in the early 1970s was composed of line bureaus dealing with medical education, medical treatment and prevention, traditional medicine, maternal and child health, pharmaceutical control, the medical equipment industry, and control of schistosomiasis. The Sidels (1974) indicate that early Chinese policy was heavily influenced by Soviet models of health care. This was not emphasized during our trip, presumably because of Sino-Soviet discord. Lampton (1977) states that the Ministry of Public Health contained "at least" a dozen bureaus centrally in Peking, with corresponding structures in provinces and counties. Since we were given no organizational charts, the exact structure of the Ministry of Public Health was difficult to determine.<sup>3</sup> Ching (1980) observes that knowledge of departments and divisions of major ministries is not widespread. While we could not determine its exact organizational structure, it appeared that the Ministry is strengthening its intellectual role and that technical decision-making (as opposed to the GPCR's political decision-making) is emerging as a key planning technique.

<sup>1</sup>During September 1980, Chairman Hua confirmed that he would relinquish his role as Prime Minister (separate from his role as Party Chairman) and that his successor would be Zhao Ziyang, a man noted for his innovative experiments with economic profit incentives and decentralization.

<sup>2</sup>China has 21 provinces, three municipalities (Peking, Shanghai, Tienjin), five autonomous regions (containing minority populations), about 2,200 counties, and about 55,000 people's communes. Provinces contain districts composed of counties and smaller cities. Communes are located in counties (Summerfield, 1979).

<sup>3</sup>The Canton public health officials were explicit concerning the structure of their organization, however.

The provincial level bureaucracy is a key planning agent that revises district, county, and municipal applications for resources. Provincial authorities can authorize limited capital construction (such as remodeling a hospital), design health prevention campaigns, transfer and place medical personnel within the province, and act in cases of large scale medical emergencies. (In such cases, the Public Health Ministry may be called upon for extra budget assistance.) Provincial Revolutionary Committees (part of the Chinese Communist Party) review the work of the provincial bureaus on policy issues and resource allocation. We were told that this type of relationship between executive and political bodies exists largely at all levels above the commune.

Below the provincial level, many health care delivery activities are locally managed at the municipal and district level. In certain instances, policy is implemented at the grass roots level through "mass campaigns" which mobilize the energies of China's entire populace. Because each jurisdiction has input to the planning and delivery process, goals which at first appear uniform at the national level may be quite varied in application. The commune we visited, for instance, appeared to have a certain amount of discretion in the delivery of health care to its residents. As is noted below, health care financing arrangements are typically locally funded and administered.

The Ministry of Public Health controls the money for capital construction. Funds flow from the Ministry through the provinces, to districts, municipalities, and counties. Resource allocation plans are revised as they are passed up through the hierarchical structure. The Chinese planning system is thus very much a "top down-bottom up" process. The allocation of funds is determined by need, changes in population, industrial development, etc. Thus, developing areas may receive disproportionately more funding. Health care services provided by hospitals, physicians, and clinics are generally locally operated and funded.

Local discretion is not limited to health care activities but appears to be a part of China's new economic policy. Ching (1980) notes that foreign businessmen have discovered that the central government has granted so much power to the provinces and municipalities that it is difficult to know who is making decisions in China. This is a marked departure from the mid-to-late 1960s, when health policy was directly formulated under the influence of a limited number of Chinese Communist Party and Peoples Liberation Army members and bypassed the medical establishment and technical planners. (This is not to say that the GPCR was orderly, but rather that it was a period characterized more by political concerns than technical ones.) This description of the planning process is confirmed by other observers (Lampton, 1977; Sidel and Sidel, 1974; Chang, 1978; Oksenberg, 1974).

## Physicians In China

### Training and Placement

China has 117 medical colleges. Four of them are "key point" colleges, which are directly supervised by the Ministry of Public Health and are among the country's most prestigious colleges. The number of medical students is

determined by a centralized planning committee. Students are selected by the medical schools on the basis of a competitive college entrance examination which emphasizes Chinese language, mathematics, physics, chemistry, and political science. Individuals between the ages of 17 and 25 are eligible for the examination and can take it numerous times.<sup>4</sup> There is no degree requirement for those who wish to take the examination; consequently, students with only a middle school (roughly junior high) education can go to medical school if they do well on the examination.

Students who take the examination are given five career choices. Thus, while not likely, a student whose first choice is archaeology could ultimately be placed in a medical school even if a medical school career was his last preference. The student's score and the "draft pick" stature of the medical school will determine which medical school the student attends. The more prestigious institutions enroll students with higher marks. Because women tend to do better on the entrance examination than men, female medical students outnumber males.

China has had numerous policies on the training of physicians over the past 30 years. After Liberation, the Ministry of Public Health was strongly influenced by Western-trained physicians. In the late 1950s, medical school consisted of six to eight years of training for physicians and four years for secondary physicians (a term used for those physicians with less training). The eight years consisted of three years of basic sciences, two years of medicine, two years of clinical medicine, and one year of field work (Snow, 1971).

Mao closed medical schools as a part of the GPCR. Between 1966 and 1969, no new classes were started, and many physicians and faculty were sent to the countryside to work as peasants. In 1968, a three-year medical school program was announced, but few physicians actually received three years training. Moreover, those students who were admitted to medical school were admitted more for their political views than for their academic skills. The arguments advanced for reducing the number of years of formal training during the GPCR suggested that acquisition of basic skills and increased numbers of physicians were more important than preservation of particular (lengthy) training schedules.

Between 1971 and 1972, three years of training was the norm. By 1973, the number of years in medical school started to increase. After Mao's death in 1976, the three year policy was even less pervasive, in that the provinces had slightly different training programs and periods of training (Sidel and Sidel, 1974; Lampton, 1977). The net result of GPCR training and student selection was undoubtedly the production of fewer and less qualified physicians.

<sup>4</sup>During the GPCR, college entrance examinations were discontinued. They were initiated again in 1977. By then, those individuals who had passed the age of 25 were no longer eligible. Because the examination rations the limited college slots, a sensitive situation exists whereby many individuals who have been blocked from social advancement may seek political redress. The Chinese conceded this point, but defended the policy of training the young (those under 25) as an optimum human capital investment strategy.

We were informed that current medical training consists of four or more years. Eventually five years will be universally required. Chinese medical school years consist of six-day work weeks with a month and a half of summer vacation. Thus, five years of Chinese medical school training is roughly equivalent to 5½ years of American medical training.

The curriculum and selection of specialty areas are set by the training institutions. All students currently take basic medical courses and acquire basic medical proficiency before specializing in areas such as general medicine, basic medical science, hygiene, industrial medicine, pharmacy, public health, oral medicine, etc. (The institutions we visited did not offer psychiatry as a specialty but did mention clinical exposure.) Pharmacy graduates, for example, are thus doctors first and then trained as pharmacists. Medical schools specialize in either Chinese traditional (70 percent Chinese, 30 percent Western) or Western (90 percent Western, 10 percent Chinese) medicine. Thus, all physicians are exposed to both processes of treatment, and all medical colleges emphasize clinical experience.

Students are discouraged from shifting areas of emphasis once they are committed to an area because such change would reduce the productivity of medical schools in terms of numbers of graduating physicians. Because of the competitive nature of the selection process and the lack of alternatives available to individuals who do not complete college, very few students drop out of medical school.

Postgraduate medical education, which ceased during the GPCR, is now reappearing. When it occurs it accounts for two to four years of training. China does not encourage foreign training (either medical or postgraduate) because it is more cost-effective to train students in their own institutions. (The administrators we spoke with were very much aware of the relative costs of American postgraduate training compared to the costs of training at their own institutions.) They do allow some of their postgraduates to train abroad, however, especially if fellowships are available. While we were told that continuing education is not generally provided to physicians, Horn (1969) notes that nurses were upgraded to physician status in the 1960s, and the Chinese indicated to us that a general upgrading through training of allied health professionals is currently underway.

Because there is no private practice, there is no licensing system in China. As Blendon (1979) indicates, the fact that Chinese physicians do not control their profession with accreditation standards has given the Chinese considerable latitude in manipulating the supply of physicians and intermediate health care practitioners. That is, the state can increase the supply of physicians and allied health practitioners simply by decreasing requirements or by creating new classes of health personnel. During the GPCR, both options were used extensively.

All physicians are salaried; new physicians receive about \$60 per month, while senior physicians earn about \$300. In comparison, the monthly salary of an industrial worker is \$45; a full professor at a prestigious medical school earns \$350 and a high party official, \$500 to \$550. The income of industrial workers may be augmented by bonuses, but bonuses were not mentioned for physicians.

Physician salaries have remained relatively constant since the 1950s. Howe (1978) presents wage ranges for the mid-1950s which are nearly identical to those we were told existed in 1979. The policy set during the GPCR was to raise low level salaries while keeping higher salaries fixed, thus eventually compressing salary differentials. Such salary compression relative to the rest of the economy also makes labor intensive medical care relatively less expensive, compared to other outputs of the Chinese economy. While we were not told of any revisions to this policy, Prybyla (1980) indicates that current economic policy favors managers, technicians, and scientists, and suggests that salaries of these favored labor categories are likely to be adjusted upward in the future. (Such an increase is likely since rural and unskilled urban incomes were sharply increased in 1979.) If implemented, this would represent a dramatic departure from Mao's policies. Thus, the Chinese socialist principle that individuals should work to serve the people rather than to gain personal gratification, which was stressed so diligently during the GPCR, may be less relevant in the 1980s.

The role of the Ministry of Public Health in the allocation of manpower (physicians and nurses) is considerable. The size of training facilities in terms of students and graduation assignments is closely controlled. Every year, demand and supply of physicians and nurses are equated by a national planning committee working with the Ministry of Public Health and provincial bureaus. The planning committee sets the number of trainees which the Ministry of Public Health and provincial planners will eventually allocate. Physician graduates from the four key point facilities are allocated directly by the Ministry of Public Health, while graduates of provincial medical colleges are primarily allocated by the provinces. Students have some discretion in their placement, but the state makes final decisions. Husbands and wives could be separated as a result of this process (thus, the general "social ban" on marriage before job assignment or age 25).

The uneven distribution of physicians between urban and rural areas was frequently cited as a source of deep concern. The Chinese told us that physicians were primarily being allocated to rural areas. Our observations, however, suggested that the barefoot doctors,<sup>5</sup> augmented by district, county, and commune mobile medical teams, represent the primary source of health care in rural areas. Graduates of both Chinese and Western medical schools were said to be distributed across the country.

### Research Practices

Research is usually initiated at the medical college level and conducted by physician researchers. Each department has its own teaching and research groups. Department chiefs within the colleges initiate projects and assign their students to these research tasks. The relative emphasis on research varies across medical colleges. At present there are few interdisciplinary studies.

<sup>5</sup>The term is used to describe part-time health care workers.

Researchers are also teachers, and observation suggests that teaching loads are heavy. During the GPCR, research received a low priority. Publication of the Chinese Medical Journal was suspended from 1963 to 1968, and many researcher-teachers found themselves in rural areas working as peasants. We met researchers who were forced out of research for nearly a decade. Any research that was conducted during the GPCR had to have a very practical focus.

The Ministry of Public Health has a pronounced influence over research. In particular, it funds research at its key point colleges and approves large research projects at other medical colleges. Research applications can be made to the Ministry of Public Health, where they are screened for funding. Very large projects require approval from numerous national ministries or perhaps Chinese Communist Party leadership. However, most research is conducted and funded at the college level. The Chinese we spoke to felt that the better research requests ultimately received funding.

Research activities are directly tied to the size of the medical colleges. We were told that negotiation between government officials and medical college staff regarding staff size and research priorities is very intense. Similarly, competition between departments within medical colleges is intense. All of this seemed very familiar.

While some research equipment was state of the art (for example, a modern German-made electron microscope dedicated to research but which incidentally did not function due to the "need" for a part), much of what we saw appeared rather primitive and outdated by American standards. Mao's desire to "make foreign things serve China" and the objectives of the Four Modernizations will obviously take some time to meet.

The medical colleges often publish their own research bulletins and publish in other medical journals. However, recent Western medical books have been difficult to obtain, and much medical research knowledge in China is, by Chinese admission, outdated. While the situation is changing, in some instances there has been a time lag of several years in acquiring research books and other technical information. (Travelers to China are well advised to bring along technical books and articles to present to the institutions they visit.) Thus, much research in China may duplicate work already in progress or completed elsewhere.

Research topics mentioned to our group concerned cardiovascular disease, pollution and related diseases, immunization, anesthesia, acupuncture, the life cycle of parasites, and the transmission of diseases (malaria, hookworm, hepatitis, dysentery, etc.). Research was also linked to pesticides, nutrition (for example, the storage properties of vitamin C, analysis of the nutritional content of daily diets, and average daily caloric intake), and birth and reproduction. There is still some research conducted on traditional medicine, even in Western medical schools.

## Peer Review and Administrative Activity

No complex procedures of peer review appeared to govern decisions concerning treatment. We were told repeatedly that hospitals are crowded and physicians are overworked, and, as a result, only necessary admissions are allowed. Surgical decisions are guided by informal peer review in the form of group consensus among the surgical team. When patients initially refuse surgery, physicians consult with them and their families and attempt to persuade them to undergo surgery to prolong their lives.

Horn (1969) reports that administrative decisions within the hospital are made by elected physician representatives. This results in less tension between physicians and administrators. In terms of patient management, Horn indicates that physicians and nurses are on relatively equal terms. This represents a sharp departure from the pre-liberation period, when the practice of medicine was the sole domain of men.

While no formal peer review procedures appear to exist in China, the problem of "over-utilization" may very well exist from an expenditure perspective. Gordon (1974) and Lampton (1977) both argue that fees, referral practices, and the organizational structure of Chinese cooperative health care financing were designed to prevent "frivolous" cases, control costs, and prevent gross resource transfers across geographic areas and populations. Such controls on utilization expenditures are logically necessary to the extent that cooperative health funds represent fixed resource pools that can be overdrawn (and have been overdrawn historically) through extensive use of care. Because cooperative health funds are locally financed, any overdraw of a health fund implies a change in local resource allocation. Given generally tight welfare budgets, "covering" overdrawn health care funds is exceedingly difficult, especially in poorer rural areas. Thus, budgetary constraints probably limit the coverage of catastrophic health care costs and other intense use of inpatient facilities in China.

## The Practice Of Medicine: Traditional Versus Western Medicine

Mao's directive that traditional medicine be united with Western medicine appears to have been implemented. Chinese practitioners regularly integrate the two forms of medicine. We were told that traditional physicians use about 70 percent traditional and 30 percent Western medicine. Western practitioners reflect similar weights but in the opposite direction. Conversation with practitioners suggested that a course of treatment could very easily be initiated in one mode and changed to the other, depending on the circumstances. Similarly, the same patient might receive both traditional and Western medicine for co-existing conditions. In some instances, the treatment itself might represent a combination of traditional and Western practices. The traditional treatment of fractures, for instance, allows for both the healing of the fracture and muscular conditioning of nearby

joints. The site of the fracture is isolated, yet adjoining body parts are allowed to move. The Western practice, on the other hand, immobilizes the joints nearest to the fracture.

The decision to apply traditional or Western medicine is made on a case-by-case basis. The physician ultimately decides, but patients are consulted to some extent. Patient consent procedures did not appear to be elaborate. My impression was that Western medicine is typically used in cancers where surgery is indicated and for coronary conditions, even if the patients are at first reluctant. Every attempt is made in circumstances such as these to convince the patient that Western medicine is in his or her best interests.

Traditional Chinese medicine has a written history of over 2,000 years and a much longer history of practical experience. The "Nei Ching," consisting of 18 volumes and written between 480 and 221 B.C., is still used by many practitioners. By the 16th century, traditional medicine was in wide use and applied to hundreds of diseases. Traditional medicine is based on the notion that disease reflects a disharmony between the basic forces of ying and yang as they flow through the body's numerous meridians. Acupuncture is said to restore harmonious relationships between the body's basic forces (Horn, 1969, 1979). Herbal medicine is also an integral aspect of Chinese traditional medicine.

When the Chinese Communists came to power, the decision to concentrate on traditional medicine was more practical than theoretical. China had few practitioners of Western medicine and was consequently forced to use traditional medicine. The considerable suspicion of Western-trained physicians and intellectuals which existed during the 1950s further damaged the influence and use of Western methods. Mao said, "Chinese medicine and pharmacology are a great treasure house and efforts should be made to explore them and raise them to a higher level" (Ximen, 1979).

Since the Liberation, there has been a reliance on the masses to gather and use herbal medicines. We saw evidence of herbal medicine in a commune we visited (which grew some of its own herbs), in numerous clinic settings, and in town shops. Herbal medicines are kept in racks and sometimes ground fresh for use. Some herbal medicines are prepared for injection. They are typically stored side by side with Western medicines. The decision as to which to use is again made on a case-by-case basis.

Acupuncture techniques are perhaps even more integral to Chinese traditional medicine. The traditional medical schools emphasize the use of acupuncture for numerous ailments and for anesthesia; Western schools also train students in its techniques. Those practitioners to whom we spoke who use acupuncture on a daily basis claimed a wide range of treatment possibilities, including treatment of neurological diseases, diseases of the digestive system, infections, acute dysentery, appendicitis, coronary heart disease, intestinal infection, diseases of the respiratory system, asthma, allergies, chronic sinus ailments, diseases of the joints and muscles, mental illness, and shock. Acupuncture was said to be particularly useful in pain reduction, reduction of paralysis, and stroke recovery. Snow (1971) states that

acupuncture treatment is best suited to diseases of the nervous system.

Acupuncture treatment can be extensive, consisting of numerous visits over extended periods of time. The effectiveness of such treatment depends upon the stage of the disease and its seriousness. We were told, for example, that advanced arthritis could only be controlled, not cured.

Modern acupuncture relies on traditional medicine but also incorporates new techniques. For instance, some acupuncture treatments use electrified needles. Small currents of five volts "vibrate" the needles and supposedly improve efficacy.

Acupuncture anesthesia is very interesting. We saw the surgical removal of a thyroid tumor which used acupuncture anesthesia. Only two needles were used, one between the thumb and forefingers, the other in the wrist of the same hand. The patient was fully awake during the entire operation. We were allowed to talk with her after the surgery. She seemed in good spirits, smiling spontaneously, and was able to discuss her experience with us. The physician member of the tour group felt that the surgery team performed well, using modern (by U.S. standards) techniques. The surgery thus represented a solid, and apparently successful, blend of Western and traditional medicines.

Acupuncture anesthesia is used mostly for surgery above the waist. Thirty percent of surgical procedures use the technique. Children do not cooperate well, so the technique is employed less frequently on them. The effects of the technique last for several hours after the surgery is performed. Acupuncture anesthesia was said to be cheaper, less likely to produce infection, and associated with fewer complications. Recovery times were also claimed to be shortened. These general impressions are also reported by the Sidels (1974), Bischo (1974), and Tan Aiquing (1979).

Dentists often use acupressure rather than Novocain to deaden nerves. This process does not involve puncture or needles, but only the use of pressure points. Novocain is still used for extractions, however. The dental equipment we saw was at least 20 years out-of-date. The dentist to whom we spoke provided free dental hygiene to all children under 17 in the commune in which he was serving.

While traditional medicine has been used to an advantage in China, it is important to note that it did not provide much help with the most urgent health problems encountered after the Liberation. As an agricultural economy using water-based production techniques, the Chinese were subject to a variety of water borne and other diseases for which traditional medicine had no "cure." Snow (1971) reports that advances in public health related to bacteriology, microbiology, parasitology, and epidemiology, which ultimately led to the prevention of smallpox, typhus, tuberculosis, plague, dysentery, cholera, venereal diseases, etc., were essentially based on scientific inquiry, not on the practice of traditional Chinese medicine. Broad scale public health measures implemented through mass campaigns have had significant impact on China's most severe health problems.

## Barefoot Doctors

Perhaps the most frequently-mentioned feature of China's health care delivery system is the barefoot doctor. The Chinese have seemingly perfected the use of entry level health personnel to increase access to care. Every clinic we visited was staffed to varying degrees by barefoot doctors, and this is presumably the case throughout China. The Sidels (1974) noted that barefoot doctors were "easily accessible" and provided care "appropriate to the level of problems presented." Gordon (1974) estimated that barefoot doctors managed 80 percent of the cases presented to them in the local clinic setting. The preponderance of their activity is directed toward maternal and infant care.

Barefoot doctors are peasants who also serve as part-time health care workers. As the importance of the barefoot doctor increased, the concept evolved to the point where barefoot doctors are now frequently thought of as medical personnel who only sometimes work at other tasks. The degree to which barefoot doctors devote their time to medical practice is ultimately limited to the production of the brigade or factory where they work. We were told that during hard times or the harvest season, barefoot doctors devote most of their time to production.

Barefoot doctors are selected based on their willingness to "serve the people" and their attainment of minimal educational levels. They live as well as work with the people they treat. Barefoot doctors are evaluated based on attitude, dedication to service, and medical skills, as evaluated by physicians. These evaluation criteria, with their stress on the practitioner's attitude, are consistent with local democratic practices, emphasis on service to one's unit, and the continuing social practice of criticism in evaluating daily activities.

Barefoot doctors typically are not paid as medical workers but rather collect "work points" from their agricultural units or receive salaries from the factories where they work. In some instances, they are emerging as salaried medical personnel. The ultimate goal is to have barefoot doctors undergo an average of two years of formal training. This reflects the increasing importance attached to barefoot doctors as a primary source of care (especially for mothers and children).

While barefoot doctors are widespread in China, they do not represent a homogeneous class of medical personnel. They are typically middle school graduates, with three to six months of training and varying degrees of "hands on" experience. They learn in a variety of settings, ranging from on-the-job training to formal training in county hospitals. Barefoot doctors are exposed to both Western and traditional medicine. Because there is no common national training policy for them, levels of competency probably vary considerably, even though they are frequently certified at the county level after passing a test. Some consistencies in day-to-day practices may result from the use of handbooks which are available to guide activities (for example, Handbook for Barefoot Physicians, published in 1969 by the Shanghai County Hospital, referenced in Maddin, 1974).

Barefoot doctors typically serve in simple facilities where they provide first level care. They give injections, perform acupuncture, apply dressings, stitch up wounds, treat acute conditions, etc. They are sometimes responsible for the cultivation of traditional herbs. They rarely set bones, even though they are the first source of care

for emergencies. Barefoot doctors perform significant preventive service and oversee public health measures by providing information to school children on nutrition, providing inoculations, and serving as birth control counselors. An important task often supervised by the barefoot doctor is the processing of human excrement (night soil) for use as fertilizer. Barefoot doctors train low level sanitary workers and auxiliary health personnel who assist in mass campaign activities related to public health.

Barefoot doctors are monitored by physicians who usually visit their locations twice each month (more frequently in urban areas). In rural areas, mobile health teams come from the cities to assist barefoot doctors.

The primary services provided by the barefoot doctors are augmented by the services of other health personnel, such as midwives, various categories of "secondary" physicians, and sanitary workers (trained by the barefoot doctors). Chinese officials told us that they are now satisfied with the current number of barefoot doctors (probably between 1.5 and 2.0 million, with approximately another 2 million sanitary workers); therefore, the policy will now be to upgrade current practitioners so that all barefoot doctors have at least two years of formal medical training. By 1985, the Chinese hope that about half of their barefoot doctors will be recruited from technical schools, as opposed to middle schools. We were told that selected barefoot doctors could eventually become physicians, through increased training and on-the-job experience.

## Access/Continuity of Care

As discussed in the health care policy section, access to health care has been crucial to China's health care policy debates. The main issue, from Liberation to the present, has been how to equalize access between urban and rural areas. During the GPCR, this issue became dominant. The development of mass campaigns, the extensive use of allied health personnel (in particular, the barefoot doctor and the sanitary worker), the allocation of physicians to mobile health teams, and the integration of health care financing with the rural commune structure have all served this purpose.

In 1968, during the GPCR, the Chinese dramatically reinforced a series of health objectives related to access (Lampton, 1977). They placed comprehensive hospitals in every district, established a health clinic in every commune, and placed a barefoot doctor in every production brigade, as well as including an allied health person on every production team.<sup>6</sup> In addition, they designed cooperative health funds to improve financial access, especially in rural settings.

The degree to which the Chinese have met their objectives is difficult to determine with existing data. Our direct observations suggest that their goals have largely been met, the exception being that access to health care in poorer rural areas is still probably inferior to richer rural areas and larger urban areas. As noted elsewhere, our relatively limited observations are reinforced by other observers.

<sup>6</sup>A production team is the lowest level of aggregation in rural areas.

Clinics are widely distributed across both urban and rural settings. The clinics we visited were generally cold, dark, physically unattractive, and sparsely equipped. (These conditions were typical of all the Chinese dwellings we visited.) Clinic hours are generally liberal, in that some clinics are open seven days a week and hours are often coordinated with the work day to meet the needs of local people.

The referral chain is initiated when patients are seen by a barefoot doctor. If a condition warrants care by a more skilled person, the patient will be seen by a physician or sent to a hospital. Neither the barefoot doctor nor the clinic physician follows the patient to the hospital. The patient is responsible for his/her own records and takes them along when he or she is admitted to a hospital, where the case is managed by hospital staff. While we were told that patients can go directly to the hospital, this did not seem to occur frequently, given the strength of the referral system.

All agricultural or industrial units usually have some type of health care facility, and every county in China has a hospital. Larger urban centers have specialty and teaching hospitals that provide both inpatient and outpatient care. Provinces also support large institutional complexes. Our general impression was that most direct access to physicians is gained through contact with visiting medical teams or hospital visits.

In urban areas, factory clinics are a primary access point for workers. Chen (1974) states that factories with 100 or more workers have small health units, and those with more than 1,000 employees typically provide hospital inpatient care. We observed a clinic with inpatient facilities at a factory we visited. Chinese factories also provide day care for the workers' children and related preventive health care services.

All told, the average Chinese patient probably has reasonable access to care. However, access to Western style physicians must be limited because China has more than four times the population of the U.S., and slightly fewer physicians (around 400,000). Matthews (1980) reports in a news article that some Chinese have expressed concern over physician access and have little faith in doctors trained during the GPCR. Lack of access to all types of physicians and to sophisticated resources, along with sparse catastrophic health insurance coverage, suggests that at least some patients go untreated (or undertreated). It is very difficult to determine the extent to which this occurs. The one statement that is indisputable, however, is that access to health care is vastly superior now to what it was before the Liberation, and much better than a Western observer might expect, given the level of China's economic development.

## Health Care Financing

Along with providing the physical access points mentioned above, China has reduced financial barriers to access since the Liberation. During the pre-Liberation period, medical care costs were prohibitive for all but the elite (landlords and high government officials). Access to health care in remote rural areas was unavailable at any price. We were told that post-Liberation policies have led to 80 percent reductions in prices for drugs and that health care in general is relatively inexpensive. Galbraith (1973) was given the same relative price statistics for drugs in the early 1970s, which suggests that medical prices were fairly constant throughout the 1970s.

Medical care prices in China have been kept low by controlling the salaries of medical personnel and the price of medicines. As noted above, medical care salaries have remained nearly constant for over a decade. Thus, medical care, because it is labor intensive, is a relatively inexpensive commodity in China.

Instead of providing for a centralized national health insurance system, the Chinese have developed four primary types of health care financing systems: (1) commune based cooperative systems; (2) factory (worker) cooperative systems; (3) resident cooperative systems in urban areas for the non-employed; (4) government and military employee systems.

Centralized funding of health and welfare activities is limited in China. While capital costs are borne by the Ministry of Public Health, operating costs are primarily absorbed by local cooperative health care financing systems. Cooperative health care financing systems are frequently part of broader welfare funding arrangements. Gordon (1974) states that welfare funds represent about 10 percent of total salaries while health funds represent about 2 or 3 percent of salaries. This is consistent with Blendon's (1979) estimate that cooperative health funds represent approximately a \$20 per year expenditure for the average Chinese family.

Cooperative health systems based on people's communes are made possible by the organization of rural areas into counties, people's communes (from a few thousand to 50 thousand persons), production brigades (1,000 to 3,000 persons) and, finally, production teams (150 to 400 persons). While the people's communes were established in the late 1950s, cooperative funding arrangements were developed during the GPCR and were implemented during the early 1970s. Financial pooling takes place at both the production brigade level (300,000 production brigades) and the commune level (50-55,000 communes). Thus, depending on definitions, China has between 55,000 and 300,000 separate, rural, health care financing systems. While there may be cross-subsidies between production brigades within a commune, there is little cross-subsidization (centralized funding) from one commune to another. This was an explicit policy decision designed to prevent transfers of wealth and to ensure tight control of utilization (expenditures) across numerous administrative units (Lampton, 1977). Rural cooperative funding systems are very much like health maintenance organizations, in that care for a given population is essentially capitated.

Commune (production team) cooperative health funds are supported by annual contributions from the peasants. These contributions are in some instances augmented by broader production team welfare funds. In return, peasants and, to a certain extent, their families receive "free" care. As indicated above, the extent of this care, (especially for dependents, children, retired farm workers, and other non-workers) critically depends on the commune's output.

Both ambulatory and inpatient care are covered by these financing mechanisms. Communes typically have a clinic or small inpatient setting. Counties and provinces fund larger hospitals. Frequently, registration fees will be charged as a form of co-payment for clinic and hospital visits. Small charges are also made for medicines. Gordon (1974) argues that such fees represent an explicit attempt to limit use.

Blendon (1979) estimates that 90 percent of China's working peasants are covered by some form of a cooperative health funding system. This estimate must be modified to the extent that some coverage packages are probably very skimpy. In particular, Lampton (1977) and Galbraith (1973) indicate that catastrophic health care is frequently not offered by the poorer communes.

Lampton further states that provincial governments have subsidized some local health care financing systems, but the practice is not widespread. China's health care financing system is thus not typically designed to devote large amounts of resources to "save" a very few persons, but rather to ensure minimal access for the masses.

There must be a great deal of variation in the ability of production teams to support cooperative health systems. Salaries are based on a commune's productivity (production team's output). When agricultural and industrial productivity are low, salaries and cooperative health funds must fall as a consequence. Lampton (1977) states that during the early 1970s, many cooperative health funds were bankrupted. As a result, referral patterns were tightened up considerably. Barefoot doctors were undoubtedly encouraged to handle more cases themselves and to discourage hospital use.

Factory cooperative health systems are similar to commune systems but typically are better endowed, since urban areas are wealthier than rural ones. Galbraith (1973), for instance, notes that 90 percent of China's central taxes are collected from urban workers (factories), although urban areas contain only 20 percent of China's population. Factories make direct contributions to the health funds for their employees. The fund then pays for nearly all health care for workers and pays half of the charges incurred by dependents.

The primary source of care for factory workers is the factory-financed clinic, which is typically staffed by barefoot doctors. Factories contract with hospitals for required care. Payments to hospitals are drawn directly from health care funds. A factory may contract with numerous hospitals, as did the Shanghai tool factory which we visited. In that case, patients have a choice of hospitals. Otherwise, choices are probably limited.

Disabled and retired workers also receive some support, the amount depending on the number of years worked. It is not clear how part-time, temporary, and contract workers are covered. There are small fees for drugs. Children receive free inoculations and medicines and care with nominal (five cent) fees. Family planning is also provided essentially free (for instance, birth control pills are free). Indeed, family planning appears mandatory in China.

Community cooperative health funds work very much like factory funds except that community members support the funds, and this form of funding is probably less extensive. Government employees, students, and military personnel are all funded from central tax funds. The military has its own health care system.

Maternity leave was frequently cited as an available health care benefit. Several forms of maternity leave were mentioned. In the poorer rural areas, leave was granted, but the employee could not accumulate work points. Urban areas support paid maternity leave. Various leave periods were discussed (ranging from a few

days to several months). Mu Chen (1969) mentions maternity leave periods of 56 to 70 days in urban areas and notes that in rural areas "pregnant women do only light work and nursing mothers work near their homes." (Mu Chen also states that "85 percent of infants in China are breast fed." During our trip we noted that dairy products were very scarce, thus the 85 percent figure does not seem particularly high.)

## Family Planning

Discussion of family planning was ever-present in China. Of all the issues discussed, this was brought up most frequently and clearly represented a major Chinese policy thrust. Chesneaux (1979) notes that the Chinese advocate birth control to limit the pressure on food production and to reduce the social, medical, and educational costs of a very young population. While two and three children families have been advocated since the 1950s, current policy encourages one child per family. This increased emphasis on family planning reflects successful public health activities which have dramatically reduced death rates. It also indicates the decision to use agricultural production, rather than population growth, to support economic expansion.

The balance between population growth and food production has been relatively tight. Liu (1978) states that grain production increased from 156.9 million tons in 1953 to 270.0 million tons in 1975, an increase of 72 percent. Population estimates presented by Chesneaux (1979) suggest that population increases have been approximately 100 percent over the same time period (from 400 - 583 million to 800 - 900 million). Howe (1978) indicates that the Chinese population could grow to 1.3 billion by the year 2000, primarily because death rates are diminishing. Howe also indicates that the Chinese link food production goals to family planning goals. No allowance is made for unplanned births. This alone would account for the extreme emphasis on family planning which we observed. Another possible explanation for emphasis on birth control is that the Chinese are attempting to move from extensive to intensive growth by improving productivity of inputs rather than by using more inputs (land, labor, and capital; Prybyla, 1980). The mandate of the Four Modernizations thus calls for technology improvement rather than an increased number of inputs.

The Chinese employ numerous techniques and incentives to reduce their birth rate. Birth control is stressed by barefoot doctors and other allied health personnel. Those we spoke to indicated that numerous contraceptive options are, and have been, available to Chinese men and women. These include the pill (which is free), the IUD, various mechanical devices, condoms, and spermicidal jellies. Injections were also mentioned. Chang (1974) reports that 22-day pills and monthly injections were being used experimentally during the early 1970s. Perhaps these techniques, frequently discussed by our hosts, are now widely used.

While abortion and sterilization are offered, the Chinese claimed that sterilization is not enforced after a family has had its first child. (The Sidels [1974] make the

same observation.) Instead, the Chinese have developed a wide range of economic incentives and social controls to support basic population control techniques. A cash bonus (\$300) is offered to families who "promise" to have only one child.<sup>7</sup> Similarly, education and day care are essentially free to one-child families. Families with two or more children are subject to charges associated with the provision of day care and education. Manipulation of housing and career options and limitations to income advancement are other tools in the population control effort.

Late marriages are encouraged.<sup>8</sup> The state's separation of husbands and wives as a result of career placements seems relatively common. There appeared to be very little stress on sex in China, and sexual promiscuity is said to be very rare. Along these lines, unisex clothing was typical, and Western-style advertising emphasizing sex was non-existent. (Some bland advertising by the Japanese was observed, however.) In short, entire aspects of Chinese society appear to be structured to limit population growth.

## Prevention and Public Health

Perhaps the greatest accomplishments of China relate to preventive and public health activities. Our hosts spoke of past accomplishments and continuing efforts in these areas. The notion of preventive health starts in primary schools. In the primary schools we visited, health, nutrition, "good habits," and physical hygiene were stressed. The barefoot doctors we visited emphasized the same areas and carried on an educational campaign with advice on weight control, diet, smoking (which is widespread in China), exercise, and birth control. Clinics provide immunization (administered at times by sanitary workers) against meningitis, encephalitis, measles, polio, tuberculosis, smallpox, diphtheria, pertussis, and tetanus. Annual physicals are given to some segments of the population, especially in industrial settings.

The key to China's success in public health is the effective implementation of the "mass campaign." When the Communists came to power in 1949, they were confronted with a bewildering range of disease, limited medical manpower, and a paucity of medical facilities. All these problems were particularly acute in rural areas. The option of rapidly building Western-style resources was clearly beyond the pale. The Red Army, however, had stressed prevention and the use of paramedics during the War of Liberation, and Mao was acutely aware of the power of organized masses. (As is well known, the Chinese have had thousands of years of experience with organized bureaucracies.) In his early writing, Mao stressed the effectiveness of the mass movement (Mao

Tse-tung, 1951) and in particular said, "A patriotic health campaign on 'elimination of four pests' should be unfolded."<sup>9</sup> Thus began the mass health campaign movement. Such campaigns gain their impetus from China's relative strength in influencing and controlling mass behavior. The energies of the entire nation were, and continue to be, focused upon a series of problems which were rapidly eliminated or brought under control.

The general approach is to set political objectives and then mobilize the bureaucracy, mobile health teams, legions of barefoot doctors, other health workers (sometimes provided by the Red Army), and grass roots organizations down to the household level. Educational activities constitute an integral aspect of mass campaigns. Centralized budgets are appropriated, but they are relatively small compared to the problems at hand.

Horn (1969) describes the campaign against the four pests as an effort where, "Tens of millions, guided by county workers who supplied the knowhow and necessary materials, waged a war of extermination against the four pests." The mass campaign against the four pests continues today. We were frequently told of the campaign's successes and current activities.

Mass campaigns were also conducted to control numerous infectious diseases, population pressures, prostitution, drug addiction, venereal disease, and schistosomiasis. While the majority of these campaigns were remarkably successful, the campaign against schistosomiasis was particularly important.

Schistosomiasis is a tropical parasitic disease which was widespread in Southern China and extraordinarily costly in terms of human suffering. The disease is woven into the fabric of Chinese life. It is caused by larvae which are transported in the "night soil" commonly used as fertilizer. The larvae are incubated by snails that live in the extensive water systems which support much of China's agriculture.

Greene (1973) reports that the effort to control schistosomiasis, though coordinated by the Communist Party, was essentially organized by the provinces, composed of districts, towns, and villages. The objective was to destroy the host snails and reduce the contamination of water by night soil. Water sources were drained, and snails were burned and buried. A simple processing technique was developed for night soil and incorporated throughout China. The net result was a dramatic decrease in schistosomiasis. The disease has not been entirely eliminated, however. A public health professor with whom we spoke indicated that resources are still allocated to research and preventive activities related to the disease.

Projects such as the fluoridation of water are supported by communes and more generally by the Communist Party and administrative bodies. National environmental standards have recently been set by legislation that resembles the U.S. Environmental Protection Act.

<sup>7</sup>Several times during the trip, we questioned the Chinese about the conditions of the "promise." We were given no clear-cut explanation of what the promise entailed.

<sup>8</sup>Perhaps enforced is a better term. A short story by Chen Johsi (1978), "Keng Erh in Peking," indicates that the state exerts considerable influence on marriages in China.

<sup>9</sup>The four pests were originally flies, mosquitoes, rats, and sparrows. In discussion with the Chinese, the "four" pests often included bedbugs and sometimes even snails (which are linked to schistosomiasis). The primary theme appeared to be the notion of "pest" rather than a particular pest (Oksenberg, 1974).

Industrial safety constitutes a serious deficiency in the preventive area. Our visits to industrial settings revealed very little practical concern for industrial safety. Safety goggles were not worn in even the most obvious situations. Our hosts claimed that workers refused to wear safety equipment. If this is the case, it would be the one area where the Chinese people refused to follow a public policy. While industrial safety was not avidly pursued, preventive health was encouraged through the use of industrial health clinics staffed with barefoot doctors and visited by mobile physician teams.

## Health Statistics

China does not have a national capability to develop and maintain health care statistics. We saw no survey research or administrative records systems, nor were there reliable data on the incidence and prevalence of specific diseases. Our hosts claimed to collect vital statistics and keep clinical records, but we saw little evidence of extensive recordkeeping. However, family planning and immunizations appeared to be extensively recorded.

A system appeared to exist to collect vital statistics for births and deaths. Deaths are reported by physicians (or barefoot doctors) to local hospitals. Every county has a hospital which collects these vital statistics and in turn reports them to larger hospitals or "security bureaus." The Ministry of Public Health reportedly keeps national statistics gathered by security bureaus. The Chinese claim that few deaths go unrecorded.

Death records contain the person's name, age, sex, and cause of death (primary and secondary). Cause of death was said to be reported through ICD-8 condition codes. If no reason for death can be ascertained, autopsies are performed when relatives grant permission. We were told that permission to conduct autopsies is regularly granted, but this appeared to be a sensitive issue due to the traditional Chinese reverence for the dead. Major causes of death were reported as heart disease, stroke, tumor, and respiratory (pulmonary infection) diseases. Air pollution was cited as a contributing factor to the frequency of respiratory conditions.<sup>10</sup> The success of China's mass campaigns is perhaps reflected by its major causes of death, which are more similar to those of advanced industrial nations than those of developing countries.

While prevalence and incidence statistics of specific diseases are not gathered nationally, the collection of health statistics is performed on an *ad hoc* basis by individual medical schools. Those health care surveys that are conducted are not linked to create national probability samples. Indeed, from what we could ascertain, large scale multi-purpose health care survey activities are essentially non-existent, although reference was made to a health examination survey which produced statistics relevant to health status. The Chinese said they were just beginning to explore epidemiological research.

<sup>10</sup>Howe (1978) reports that China may have the world's largest coal reserves and that two thirds of China's energy supplies come from coal. While this reduces reliance on scarce oil reserves, it does lead to very visible pollution problems, especially in the major urban centers of the north where coal is used to heat all residential housing units.

While national probability household surveys do not exist in China, large-scale screening efforts do provide limited data on certain conditions. For instance, a general survey of 200,000 people in one area led to the discovery of 270 liver cancer cases, and screening services are increasingly centered on cervical cancer (Ximen, 1979). We noted that cancer screening was fairly common in industrial settings. Green (1973) cites a survey conducted in the early 1970s that disclosed 11 million cases of schistosomiasis in Southern China. Thus, while multi-purpose household surveys are limited in scope and frequency, large single-purpose screening surveys appear to be an integral aspect of China's health care information collection.

Patient recordkeeping takes many forms. Children and women of child-bearing age are tracked more carefully than the remainder of the population. Children's records are particularly well-documented in terms of immunizations, while the women are tracked as part of the nation's birth control activities. One aspect of the recordkeeping operation that might appear different to a Westerner is that patients keep the only continuous set of records concerning their health. (The Sidels [1974] also report this aspect of Chinese recordkeeping.) While we were given no documentation to suggest how well this system works, it suggests the possibility of providing a comprehensive health record for every individual in the country. However, systematic analysis of such records would require a household survey since institutions do not maintain records of this nature.

Data on hospital use were not available. Physicians did not seem to be aware of average length-of-stay statistics. The notion of days of care per 1,000 population seemed even more remote.

Chinese health care statistics are piecemeal at best. Lacking national incidence and prevalence data, researchers are forced to make inferences from isolated data sets. Galbraith (1973) and Lamon and Sidel (1974) conclude, from analysis of data gathered in Shanghai, that measures of morbidity and mortality in this urban city approximate those in large Western cities (New York, for example). Concerning life expectancy, Horn (1969) estimates that in the mid-1930s average life expectancy was about 28 years. We were told that life expectancies are now in the high 60s and early 70s. (Lampton [1977] reports life expectancies of 73.8 for females and 69.3 for males.) Comparable U.S. statistics for 1976 are 76.1 and 68.7 (DHEW, 1978).

Some information on maternity and infant mortality is available. Green (1973) reports that in 1956, maternal mortality was .3 per 1,000 live births (England and Wales were at .56 in 1955.) In Peking, the infant mortality rate fell from 117/1,000 live births in 1949 to 37/1,000 live births in 1956. In Shanghai, the infant mortality rate was at 31/1,000 live births for 1956. (The comparable overall U.S. figure for 1955 was 26.4/1,000, while the figure for U.S. Chinese in 1955 was about 18/1,000 (DHEW, 1978 and 1980). Lampton cites Chinese medical association figures for infant mortality rates of 70/1,000 live births in 1959 and 60/1,000 live births in the 1970s. Pre-LiDeration infant mortality estimates run from 200/1,000 live births on up. While rural health conditions are undoubtedly worse, available statistics represent remarkable accomplishments, given China's relatively low overall economic development.

## Accomplishments, Relevance, and the Future

The health care system in the People's Republic of China has achieved much in its 30-year history. Starting from essentially a "worst case" situation, the Chinese now can boast of preventive health levels, access to first level care, and health status measurements that are comparable to those of the most economically advanced nations.

Our observation was that the Chinese were well fed and clothed and appeared to be "happy." While many aspects of the Chinese health care delivery system are outdated and unsophisticated compared to those of Western nations, the strength of the Chinese system, given the low level of its gross national product, is unprecedented among nations. Priorities set soon after Liberation have been followed more or less consistently, so some form of health care is now accessible to most Chinese at affordable prices.

As Blendon (1979) notes, it is not likely that the U.S. health care system will be influenced by the practices of the Chinese. The mandatory assignment of professionals, the development of mass campaigns, extensive control over the economy and associated wage structures, the social organization of the populace, and the existence of thousands of years of traditional medicine ensure that China's health care delivery system will continue to operate differently from that of the U.S.

While China's policy tools are markedly different from those of the U.S., the policy concerns of Chinese health care are in many ways very similar to those of the U.S. China emphasizes preventive services, specialty and geographic distribution of physicians and services, content of health care professional training, mix of health care delivery professionals, access to care in rural areas, health care financing and utilization (expenditure) issues, the degree to which planning and delivery should be decentralized, relative salary structures, the impact of referral systems on access, and appropriateness of use. All are certainly familiar issues to U.S. health planners. Thus, while the U.S. and Chinese health care systems function quite differently, problems are similar. This is likely to be the case even more during the 1980s.

The pursuit of the Four Modernizations in some respects ensures this result. Along with modernization comes emphasis on quality, advanced techniques, and specialization. These tendencies, which typically imply increasing emphasis on complete, expensive, inpatient care, will most certainly be embraced by the physician-dominated Ministry of Public Health.

Increased emphasis on quality and specialization may require wage increases for medical specialists. Such adjustments could increase the relative price of medical and health care in China and may impose a financial burden on large segments of the population. In addition, success with public health and birth control must eventually lead to an older population requiring more extensive use of health care resources, especially intensive long-term and inpatient care. The policy of professional placement will similarly place more demands on institutional settings by separating the elderly from their professional children. The desire to provide catastrophic coverage will also be costly, and the cost will increase as the population ages. China may have achieved great

success only to enter into a new era, an era characterized by "Western" problems. The new era may not be particularly amenable to familiar policy solutions which use China's strength in organizing its populace.

If problems of specialization, geographic maldistribution, increasing need for institutional care, and increasing awareness and demand for health care inexorably lead to heightened health care financing difficulties in China, this would only prove once again that there is no "magic bullet" solution for the health care issues confronting nations in the 20th century.

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