Medicine in China

Barefoot Doctors and the Medical Pyramid

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China is still a predominantly agricultural country. Despite the growth of vast industrial cities like Shanghai, most of the population still lives and works on the land. The provision of medical care for agricultural workers is based on two concepts: a decentralized, pyramidal system of medical responsibilities, with at the bottom of the pyramid the barefoot doctor. This system has been fully developed only in the last few years; indeed a major criticism of medicine made during the cultural revolution in 1966 was that hospitals and medical personnel were being concentrated in cities at the expense of rural areas, and it needed powerful political pressures to reverse this trend.

Barefoot Doctors

The key figure in health care in the countryside is the health worker known as the barefoot doctor. This is the accepted English translation of the Chinese term chijiao yisheng and it may have been a rather unfortunate choice, since barefoot doctors rarely go barefoot and are certainly not doctors—either in their own eyes or those of their patients. Barefoot doctors are farm workers who have been given some basic medical training; they give simple medical treatment or advice but they also continue to do their former agricultural work. This division of labour between medicine and farming can best be understood by considering the vast numbers of barefoot doctors—a unit of commune workers and their families amounting to 200 persons in all might include two or even three of these part-time health workers.

A barefoot doctor diagnoses and treats simple illnesses, but his main duties are in health education and preventive medicine. It is his job—or hers—many are young women (Fig. 1)—to teach the commune members about simple personal hygiene: washing their hands before preparing meals, using the latrines rather than passing excreta into the fields; to make sure that children and adults are immunized against infectious diseases, and to lead campaigns about birth control and the eradication of pests such as flies and mosquitoes.

The training programme for barefoot doctors seems very variable, but it generally consists of a basic three month course, usually given at either the commune or the county hospital, followed by periods of further training of one to three months in succeeding years, and augmented by teaching from mobile health teams—groups of doctors from city hospitals who visit rural areas (see below).

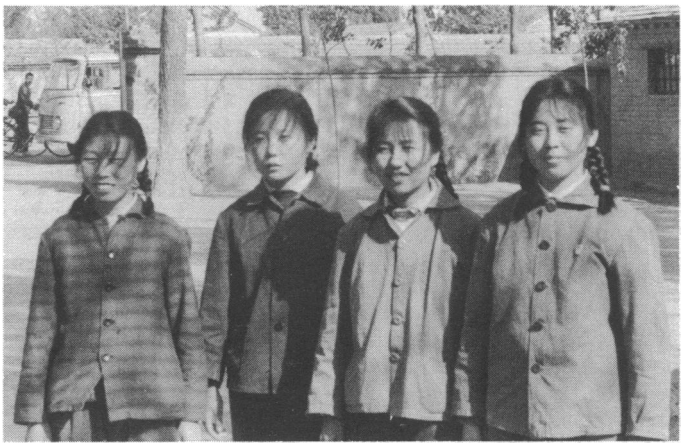

FIG. 1—Young barefoot doctors at a rural health station.

In addition to their basic work of simple primary care barefoot doctors are also used in a most enterprising way to help cope with diseases presenting a particular local problem. We were told that in north east China, where carcinoma of the oesophagus is very prevalent, the barefoot doctors had been trained to pass a tube down the oesophagus, take a biopsy specimen of mucosa, and make the first cytological assessment of the smear. In a similar way barefoot doctors in the Kwangchow area, where carcinoma of the nasopharynx is a major health problem, had been trained to ask their fellow workers about early symptoms such as haemorrhage and to examine them for the signs of early disease including examination of the posterior nasopharynx. The underlying principle seems to be that a barefoot doctor is given rudimentary training in preventive medicine and may also be trained to carry out one or two specific tasks that may be important in early diagnosis. However, since his medical work occupies only a fraction of his time the barefoot doctor does not, it seems, become bored with its repetitive nature or dissatisfied with its limited scope.

Agricultural Communes

Throughout the countryside of China the administrative unit for all purposes is the commune. We visited three—one each in the areas of Peking, Shanghai, and Kwangchow—and while these were clearly "show" communes that had been seen by many other visiting delegations from abroad, they did not seem ob-

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viously different in external appearance from others seen from the road in the many miles of travelling by road we did while in China.

The commune we visited near Shanghai had been set up in 1958 and consisted of 5,400 households totalling 23,000 people. The workforce was divided into 11 production brigades and these were further divided into a total of 120 production teams—each with an average of 200 men, women and children. The production team is the living and working unit; the 50 or so families that make it up live in a group of houses as neighbours and have the responsibility for working a defined area of land.

The commune is very like a small town in its self-sufficiency. This one at Shanghai produced grain, cotton, and medicinal herbs as its main crops; but it also ran nine other enterprises, including a small factory making farm tools, a pig farm, a fishery (based on fish ponds), and a dairy farm. We were told that the output of the farming activities had been rising each year as a result of increasing mechanization.

The medical organization of the commune mirrors its administrative arrangements. Each production team of 50 families has two or three barefoot doctors who give simple treatment for minor ailments, first-aid after accidents, and general health advice and propaganda—fulfilling the traditional role of the village nurse in Britain.

The production brigade, the next unit up the administrative pyramid, has its own simple health station. Those we saw consisted of two- or three-roomed huts, the walls covered with posters carrying propaganda on family planning and other health education campaigns. Inside the hut was a simple consulting room and dispensary. The stock of medicines was surprisingly large and included many powerful drugs such as prednisone, phenylbutazone, chloroquine, and a full range of antibiotics as well as an equally impressive array of traditional Chinese medicines.

Health stations are also staffed by barefoot doctors, usually three or more, who take turns to be on duty or to be working in the fields. There may also be a few health workers who have themselves been trained by barefoot doctors to carry out tasks such as giving injections of vaccines. The stocks of drugs carried by the health stations are used by the doctors who work there and also supply members of the brigade who have been given prescriptions at the commune or county hospital.

Commune Hospital

The commune hospital is the apex of the pyramid of medical care within the commune itself, and it offers a fairly wide range of treatments for common or recurrent disorders. The commune hospitals we saw were simple two-storey buildings (Fig. 2), with few pretensions, but they were busy and clearly cope with a steady work load. The Shanghai hospital had 37 medical personnel, of whom 17 were doctors, the rest being nurses and technicians. Ten of the doctors had been trained in traditional medicine and seven in western medicine. The hospital has about 30 beds, an operating theatre, a clinical laboratory, and an *x*-ray unit for straightforward radiography.

Doctors who work in commune hospitals each have their own specialty—internal medicine, E.N.T, gynaecology, orthopaedics, and so on. In the larger commune hospitals there is a barefoot doctor in the entrance hall who makes a snap decision on which specialty the patient needs, and the patient is generally asked whether he wants to see a traditional or a western doctor. The medical and surgical conditions treated are the simple and straightforward ones: the surgeons deal with hernias and appendicitis and the physicians with bronchitis and digestive disturbances.

One of the characteristics of life in an agricultural community is the uneven pace of work—there are periods of intense activity when crops are being sown or harvested and periods of relative slackness. Use is made of this periodicity by the medical services—we were told that the training of barefoot doctors is concentrated into the slack periods, and routine "cold" surgery is also mostly done at the quiet phases of the agricultural year.

FIG. 2—Simple two-storey commune hospital in Shanghai

County Hospitals

Medical problems too complex for the staff of the commune hospital are referred to the next level in the pyramid, the county hospital. There are more than 2,000 counties in China, each of which has a hospital ranging in size between 100 and 300 beds. These are mostly situated in towns and they serve the needs of the local inhabitants as well as those of the rural communes around them. Clearly the sort of case that is referred from a commune hospital to the county unit depends a lot on their geographical relationship: but another factor, unique to China, is the mobile medical team.

Mobile Teams

One of the central themes of the cultural revolution was the need for city-dwellers such as doctors and research workers to return to the countryside and to see for themselves the importance of the tasks of the agricultural worker—indeed for a time it was thought necessary for city doctors to spend some time working on the land alongside the farmers. This view has now been modified but city and university hospitals still send teams of doctors and other medical personnel into the countryside, and at any one time as many as one-third of the total staff of a city hospital may be out in mobile teams in the rural areas.

These teams have four functions: they teach their own members the importance of the agricultural community and so help to stop any trend to intellectual elitism—or, as it might be expressed in the West, any tendency to ivory-tower attitudes; they play a vital part in carrying postgraduate education to the doctors, barefoot doctors, and other medical personnel in county and commune hospitals and on the communes themselves; and they cope with a large part of the non-urgent but difficult medical and surgical problems that may have accumulated over a period of months—quite a high proportion of the "cold" surgery on agricultural communes seems to be done by mobile teams on their visits to the commune hospitals. Finally, they can educate the barefoot doctors in their role in the early detection and prevention of endemic disease—and often this means teaching them to carry out diagnostic screening tests. The unique "doctor" to patient ratio achieved by the barefoot

doctor system has the effect of ensuring a very high response to any screening programme, since each doctor has not more than 50 families under his care, and can easily identify and chase up defaulters.

City Health Care

The agricultural commune system has been adopted in many respects for city administration too. Again the fundamental unit is the commune, with a population of between 20,000 and 70,000. We visited a sort of Chinese new town on the outskirts of Shanghai, with a population of 62,000 built in the early 1950s. Most of the residents worked in small factories, situated within the commune, making surgical instruments, electrical goods, and batteries. They lived in blocks of flats, three to four stories high, separated by patches of open land planted with trees and with play areas for children. Schools, shops, and entertainment facilities in the commune were all part of its own administrative system: so were the medical services, based on a single neighbourhood hospital and 10 health stations. The function of the health stations, like those at production brigade level in the countryside, is mainly in preventive medicine: immunization against infectious diseases, education about birth control, and campaigns against flies or rats should these become necessary. Medical treatment for simple illnesses is also provided in the health stations, though during the day someone falling ill in a factory would go to the factory health worker—an urban equivalent of the rural barefoot doctor—while a child taken ill would be seen by the school medical staff.

The system (see Fig. 3) is administratively similar to that on agricultural communes but it works rather differently in the city because population densities are higher and distances correspondingly lower: for example, while women on an agricultural commune would have their babies in the commune hospital those living in the city were taken to the nearby district hospital (10 minutes walk) for normal deliveries. Nevertheless, the city commune hospital, with 21 conventional and 5 traditional doctors, clearly coped with a vast amount of simple illness and carried out simple surgical operations. Certainly all minor casualties, aches and pains, digestive disturbances and chest conditions were seen and treated on the spot, and there were 30 beds for inpatients.

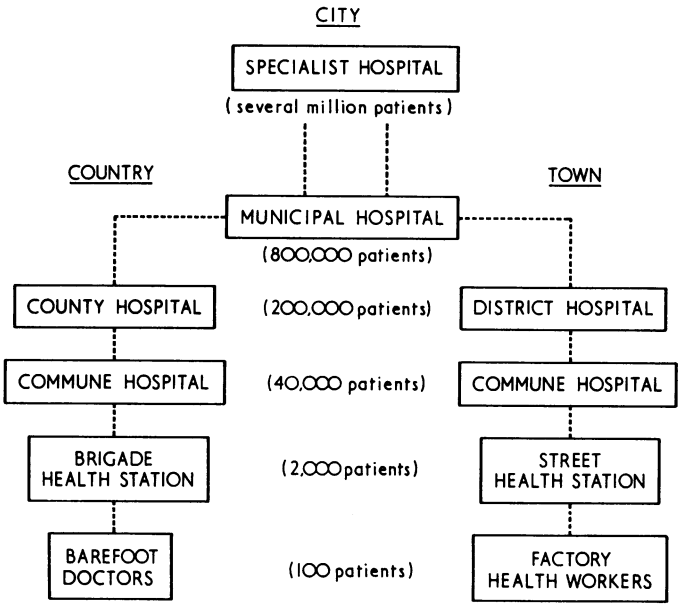

FIG. 3—Pyramid of medical care. The figures are estimates of the numbers of patients in the catchment area at each level of organization.

District Hospitals

Inside the cities the district hospitals fill the same role as that provided by county hospitals in the rural areas: they cope with the more serious and complex diseases that are referred from the commune hospitals. However, since the city commune units tackle surgery up to the level of hernia and appendicitis the work load of a Chinese district hospital is much lower than the British equivalent. The formal hierarchical structure loses its tidiness at this level, too, since in addition to district hospitals the bigger cities such as Kwangchow and Peking also have municipal hospitals and specialist and teaching units.

The Peking Friendship Hospital, for example, was built in 1952 as a general municipal hospital with 612 beds. It offers top-level medical and surgical services to 7 district hospitals and 2 county hospitals and also provides first-level hospital facilities for the workers in 110 offices, schools, and factories in the immediate neighbourhood of the hospital. The number of outpatients seen a day was given as about 3,000. In addition to the large hospitals such as the Friendship Hospital, which is linked with the Peking Medical College, there are a few specialist hospitals linked with the Chinese Academy of Medical Sciences. In Peking we visited the heart hospital (Fu Wai Hospital) and the tumour hospital (Jih Tau Hospital) and found a pattern of teaching and treatment comparable to that in similar institutions in London.

In the heart hospital, for example, we saw patients drawn from many parts of the country—this is one of the few units in China doing advanced cardiac surgery. Since it was built in 1958 the hospital staff have done 12,000 operations on the heart and lungs including 2,000 under hypothermia or extracorporeal circulation.

Even at this level, however, there was a strong emphasis on the twin themes of the cultural revolution. Traditional medicine was being integrated with the western techniques—acupuncture anaesthesia was being used for about 10% of operations and acupuncture was also used for pain relief after myocardial infarction; the value of herbal medicines was also being investigated. Contact was maintained with the countryside partly by a rotation system under which staff members spent up to one year doing routine medical work in commune and district hospitals and partly by sending mobile medical teams to the rural areas. These teams were doing epidemiological research on the incidence and early detection of hypertension and other forms of cardiovascular disease as well as giving refresher course teaching to the local doctors.

Paying for Medical Care

China's health service is not free: the patient is expected to pay for his treatment, and hospitals make a charge for food supplied to inpatients. When we asked about the scale of these charges we were told they were "very small"—a few fen a day (480 fen = £1). Children, students, and pensioners receive free hospital treatment.

The communes we visited, in both town and country, were operating a co-operative insurance scheme. For an annual premium of about 2 yuan (less than 50p) a worker who earned about 60 yuan a month, could insure against all costs of medical treatment should this become necessary. The long-term policy of the health authorities is said to be the introduction of a free health service.

A Changing System

As organized at present, then, the Chinese system is unique: for the medical pyramid provides not just a hierarchy of specialization of treatment but also a hierarchy of medical training. The barefoot doctors and factory health workers at the bottom have been given only the rudiments of a medical education; the commune hospital staff roughly parallel general practitioners in

Britain; while the specialists at the top have undergone a training as long and detailed as their counterparts in the West.

A second feature peculiar to the Chinese system is the vast amount of primary care provided by traditional doctors. Even from our few hospital visits it was clear that traditional doctors are found more often in country areas than in the cities; probably in the heart of the country they form the majority of trained medical personnel. The training of a traditional doctor is designed to fit him for primary care—surgery has no place in the system, nor have complex investigations. The traditional physicians provide China with huge numbers of doctors with no ambition for urban practice.

Both of these situations are changing, however. Each year barefoot doctors acquire more knowledge, as do the qualified doctors working in commune and county hospitals. In other countries experience has shown that as medical auxiliaries add to their experience and competence they want to enlarge the scope of their work: whether this will happen in China remains to be seen. The proportion of traditional doctors in the medical work force is also changing—only 10% of new medical graduates have been educated in traditional medical colleges. At present the formal medical course in China lasts for only three years, and a medical graduate who wishes to specialize has a long post-graduate apprenticeship to serve before he can hope to get an appointment at a specialist hospital in Peking or Shanghai: but again the experience of other countries is that young medical graduates wish to work in academic centres rather than provide primary care in country areas.

One all-pervading impression in our travels in China was the cheerful enthusiasm of workers, doctors, and indeed everyone. The pioneering spirit, the sense of building a new society, is very apparent: people accept that the needs of the State rather than personal choice determine the sort of work they do and the place that they do it—and at present the emphasis is on the rural areas. It remains to be seen whether, with increasing material prosperity and improved communications, most of the new generation of Chinese doctors will be content to work in small hospitals in the country.

Today's Treatment

Blood and Neoplastic Diseases

Acquired Aplastic Anaemia

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The term "aplastic anaemia" is applied to a group of disorders having in common pancytopenia, hypocellularity of the bone marrow, and prolonged clearance of iron from the plasma. Patients with a similar clinical picture, in whom the marrow is cellular, are excluded by this diagnostic triad, though it is doubtful whether the distinction should be rigid. Aplastic anaemia can be a qualitative as well as a quantitative disorder: islands of cellular marrow, often with morphological features of dyshaemopoiesis, are frequently found in patients with a predominantly hypoplastic picture.[1] Moreover, some agents which usually cause aplasia may occasionally produce pancytopenia with a cellular marrow. The pathogenesis of acquired aplastic anaemia is poorly understood, but the disease is probably due to factors, exogenous or endogenous, which injure or inhibit haemopoietic stem cells and impair their ability to replicate, and thus fulfil their dual role of self-maintenance and of providing cells for the maturation pathway.

Classification

About half of cases of acquired aplastic anaemia have an identifiable cause. Industrial and pharmacological chemicals are the most commonly implicated, while viral infections account for an unknown proportion. The remaining cases are usually classified as "idiopathic," but, because of the bewildering variety of potentially toxic agents to which an industrial population is exposed, the true incidence of idiopathic cases is probably lower. Chemical agents causing marrow damage are broadly divided into two groups: those in which the frequency and severity of marrow damage is proportional to the dose, and those in which there is no dose relationship (the onset of aplasia being unpredictable and depending on an unusual reaction by the patient to

*Drugs and Other Substances Producing Marrow Aplasia**

	Definite Association	Possible Association
	Class 2	
Antimicrobials, etc.	Chloramphenicol Sulphonamides Organic arsenicals	Penicillin Streptomycin Amphotericin
Pyrazalones	Phenylbutazone Oxyphenbutazone Aminopyrine	
Hydantoins	Mesantoin Tridione	Primidone and possibly others
Sulphonylureas	Dilantin Tolbutamide Chlorpropamide	
Metals	Gold	Bismuth, Mercury
Miscellaneous		Aspirin, Chloroquin, Potassium chlorate, Phenothiazines, Thiocarbamates, Sulphamyl compounds, etc.
	Industrial Chemicals	
Aromatic hydrocarbons	Benzene, TNT, Solvents	?Hair dyes
Insecticides	DDT Parathion	

*For non-phase specific and s-phase specific cytotoxic agents see text.

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