Preventive Health Care Services in Poor Rural Areas of China:

Two Case Studies

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1 Introduction

Since the early 1950s, 'prevention first' has been one of four major policies in China's health strategy. The health status of the Chinese people has improved dramatically. During the 1980s, the level of preventive health care provision and people's health status continued to improve in many areas, but the development of health services has been unequal. These inequalities are reflected in indicators of the health status of rural populations and of the coverage of preventive health care services.

This article is based on case studies of Donglan and Xunyi counties. The preventive health care services provided in the two counties are described and aspects of the delivery of services which should receive the attention of policy makers are suggested.

2 Health Conditions and Coverage of Preventive Programmes in Two Counties

Table 1 presents two key indicators of health status, the infant mortality rate (IMR) and the maternal mortality rate (MMR). In 1992 the IMR in Donglan was similar to the mean for poor rural counties in a national survey (MoPH 1994). In 1992, Xunyi reported similar infant and maternal mortality rates to the average level for rural China. These indicators suggest that health conditions were better in Xunyi than in Donglan, and that despite its relatively low level of economic development, health status in Xunyi is comparable to the average for rural China.

Family planning, prenatal health care services and child health care all help to improve the health status of mothers and children. A household survey undertaken in 1994 revealed big differences in the utilisation of MCH services in these counties (Table 2). Approximately half the women who gave birth in Xunyi received prenatal examinations, a considerably higher proportion than in Donglan. The vast majority of births took place at home, but in Donglan few deliveries were attended by formally trained personnel. A higher proportion of women received postnatal visits in Xunyi than in Donglan. Overall, there is better access to MCH services in Xunyi than in Donglan, and it seems reasonable to suggest that this contributed to the lower IMR and MMR in Xunyi.

IDS Bulletin Vol 28 No 1 1997

Table 1 **Infant and maternal mortality rates in Donglan and Xunyi (1992)**

	IMR (1/1,000)	MMR (1/100,000)
Donglan[a]	94	503
Xunyi[b]	46	90
Rural China average[c]	46.5	84.8
Poor rural counties[d]	72	-

Sources: [a] 1993 sample survey; [b] County Health Bureau, cited in Gu (1995); [c] Health Minister of the PRC (1994); [d] MoPH (1994)

Donglan and Xunyi's anti-epidemic stations both reported that dysentery, hepatitis and measles were among the contagious diseases with the highest incidence rates. Since the under-reporting of disease incidence rates is a common problem in the anti-epidemic system, reported rates should be interpreted with caution. Nevertheless, the different trends during the 1980s and 1990s in the reported rates of contagious disease incidence in Donglan and Xunyi are revealing.

Disease incidence rates have declined greatly in Xunyi. The overall rate for 1992 was only one tenth of the 1981 rate. This trend is consistent with the rise in immunisation coverage rates since the late 1980s. Coverage rates for the major types of vaccination were all above 90 per cent in the early 1990s. Though there may be some under-reporting, data collection and reporting are well monitored in Xunyi, so the trend seems plausible. In contrast, although reported contagious disease incidence rates in Donglan have gradually declined, the pattern has been erratic. Outbreaks of epidemic diseases, such as dysentery and measles, have occurred. The reported figures for other years may not be very reliable, as it seems from discussions with county health personnel that disease reporting work may be more strictly undertaken in years when there is

Table 2 **MCH service utilisation and provision in Donglan and Xunyi (1993)**

	Donglan[a] (n=698)	Xunyi[a] (n=910)	Rural China average[b]
Number of births	44	69	-
Prenatal examinations:			
% receiving prenatal examination	22.7	55.1	60.3
Location of Delivery (%):			
Home	91.0	88.4	76.6
Village health station	0.0	1.5	1.3
Township health centre	4.5	7.2	12.1
County hospital	4.5	2.9	9.5
Personnel assisting delivery (%):			
Hospital doctor	6.8	10.2	24.7
Village doctor	2.3	20.3	7.9
Birth attendant	13.6	17.4	42.0
Traditional birth attendant	25.0	21.7	14.6
Family member	52.3	30.4	10.8
Postnatal visits:			
% receiving postnatal visits	11.4	47.8	48.3

Sources: [a] 1994 household survey; [b] MoPH (1994)

a severe epidemic. This provides a strong indication of the problems in anti-epidemic work in that county. The director of Donglan's anti-epidemic station stated that during the 1980s immunisation coverage rates were around 85 per cent, but that they had fallen since then. Organisational and financial problems in implementing immunisation work were a major cause of the increase in the incidence of epidemic diseases in recent years.

Although both counties are relatively undeveloped, Xunyi has made significant progress in the promotion of preventive and MCH services. It is therefore worthwhile to summarise and draw conclusions from its example. The following sections discuss the contributions of organisational and financial factors to the differences between these two counties in the provision of MCH and immunisation services in rural areas.[1]

3 The Organisation and Provision of Preventive Health Care Services

The main preventive health care programmes are delivered through organisational systems similar to those found in most of rural China. The preventive institutions at the county level are the anti-epidemic station and the MCH centre.[2] Anti-epidemic stations are responsible for contagious disease prevention programmes (e.g. immunisation), inspecting and testing of sanitation and environmental health, and data collection and reporting. MCH centres are responsible for providing family planning guidance and MCH services (e.g. perinatal care, child growth monitoring, gynaecological screening) to the population and technical support to health workers within the county. Township health centres assign some staff to their disease prevention and MCH sections (see Tang 1997). Their work is supposed to be supported and monitored by staff from county level preventive facilities. Township preventive staff should provide guidance to village health workers. However, these case studies show that the delivery of preventive health services in rural areas actually varies considerably between localities.

3.1 Donglan

Previously, Donglan's anti-epidemic station and MCH centre required staff responsible for rural service provision to spend one third of their time working in the townships. In recent years, rural preventive work has been weak in both county preventive institutions.

Donglan's anti-epidemic station had 35 technical health personnel in 1992. Eight staff of the epidemic disease control section were responsible for immunisation in the county's 23 townships. In recent years these staff have only gone to the townships when there is an epidemic outbreak. In 1993, due to lack of funding for the operation of a cold chain throughout the county, immunisations were provided only at specified locations. Coverage rates remained low and an epidemic of measles occurred. The anti-epidemic station's remaining 26 health workers spent a lot of their time in revenue generating activities, such as inspecting environmental and food health, inspections in schools and factories, laboratory tests and outpatient services.

Donglan's MCH centre has also allocated a number of staff to revenue-generating activities, and the scope of rural MCH work has been restricted. Most efforts to protect the health of pregnant women are restricted to urban areas and two pilot villages. MCH work in other rural areas is supposed to be carried out by township health centres. Guidance of township health centres by the county MCH centre has declined and data collection has been relaxed (see Tang 1997). The county MCH centre only provides sterile delivery packages to a few townships.

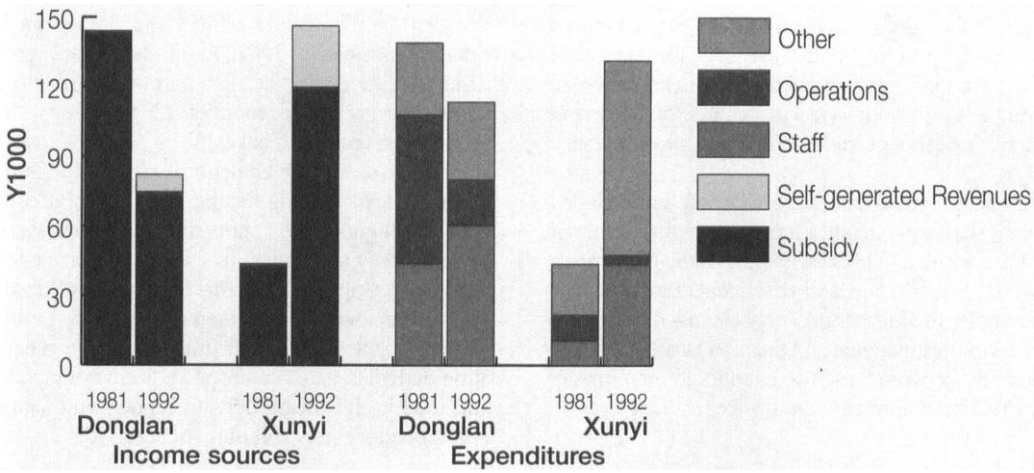
Each township health centre has a preventive health group, with two or three personnel who have received specialised training. Sometimes these personnel also provide curative services. Township preventive health personnel are also responsible for training and guiding village health workers in undertaking preventive health work. However, as with county level facilities, township preventive and MCH staff visit the village level infrequently (Tang 1997).

Most villages in Donglan are served by private village health workers who do not regularly provide preventive services (Deng *et al.* 1997). In 1995, the county government organised a polio immunisation campaign, with funds provided by the County Finance Bureau. Each village health worker received a small sum to compensate for their efforts, and the immunisation campaign mobilised preven-

[1] 'Rural' refers to townships and villages outside the county towns.

[2] County localised disease control stations are also found where the need exists.

Figure 1 **Sources of income and expenditure in anti-epidemic stations (constant 1980 prices)**



Note: 'Other' includes equipment, maintenance and construction.
Source: County Anti-Epidemic Stations

tive personnel at all three levels, including private rural doctors. Immunisation coverage rates rose to 83 per cent from less than 50 per cent in 1992. However, most township health centres fail to maintain routine operational links with village health workers to provide supervision and support. There are no funds to support regular immunisation campaigns, so high coverage rates have not been sustained. Similarly, MCH services are not provided to most rural women during the perinatal period. This undoubtedly contributes to high infant and maternal mortality rates.

3.2 Xunyi

Immunisation coverage rates and MCH service utilisation rates are much higher in Xunyi. Xunyi's anti-epidemic station has less staff than Donglan's, but it assigns more personnel to rural work. Xunyi's MCH centre also has a stronger orientation towards rural work.

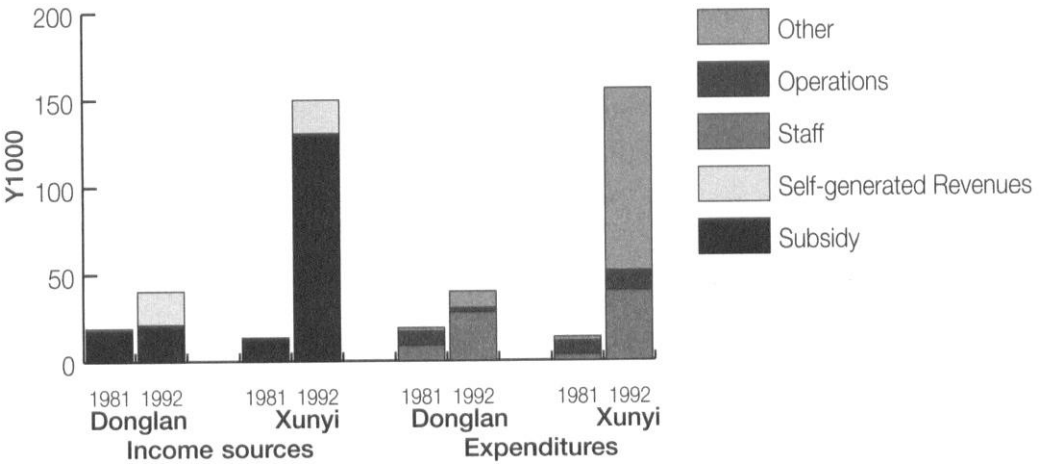
The county government has signed contracts with township governments that require the latter to ensure that targets relating to primary health care (PHC) are met, and annual evaluations are carried out. PHC work is given higher priority by governments at each level. The County Health Bureau and anti-epidemic station have set clear targets for health care facilities, and county personnel often inspect and provide guidance to township health centre staff. Clear responsibilities and targets have been established, and the work of personnel at each level is evaluated and the size of bonuses is related to performance.

The basis of planned immunisation work in Xunyi is the village health station. As in Donglan, rural doctors spend a large proportion of their time in curative health care and agricultural work (Deng *et al.* 1997). However, in preventive work, they are supervised by township preventive personnel. Visits to township health centres and village health stations in Xunyi revealed that preventive work records were kept quite systematically, so their work could be monitored.

A prepaid immunisation insurance system has been established in Xunyi. Over 90 per cent of the county's children participate in the system. Parents make a small pre-payment when the child is born which entitles the child to courses of four types of vaccination over a seven-year period. Those who do not pre-pay are charged for each vaccination. The funds raised are divided between village, township and county levels, which also share responsibility for paying compensation if the relevant disease

[3] In 1994, the fee for the whole course was ¥12. Compensation ranged between ¥10 and ¥100 for the occurrence of different diseases.

Figure 2 **Sources of income and expenditure in MCH centres (constant 1980 prices)**



Note: 'Other' includes equipment, maintenance and construction.
Source: County MCH Centres

occurs among the local children who have been immunised.[3] This system ensures that village health workers are remunerated for immunisations. Shared responsibility for compensation also provides an incentive for township and county staff to monitor the work of lower levels.

Almost all villages in Xunyi have an MCH station. Each village MCH station is provided with essential equipment and is staffed by part-time MCH aides who have had specialised training as midwives. When a woman is pregnant, the MCH station gives her a pregnancy system health card, and carries out prenatal checks, delivery and postnatal visits according to the schedule on the card. Clear targets relating to MCH service provision have been set for facilities at each level. County and township facilities organise inspections twice a year and monitor work at the village level. The success of this system is reflected in the higher utilisation rates of MCH services in Xunyi, although most deliveries still occur at home (Table 2).

This brief summary of the organisation and provision of preventive health care services revealed significant differences between the study counties. Preventive and MCH services in Donglan are only irregularly provided in rural areas. In Xunyi, township and village level facilities receive support from county level units, which helps ensure the adequate provision of preventive and MCH services in rural villages. In addition to organisational factors, it has been indicated that financial support has a significant impact on service provision.

4 Financing Preventive Health Care

In the last 15 years, government allocations to the health sector have grown in Donglan and Xunyi. In Xunyi, expenditures on preventive and MCH work have increased more rapidly than the overall increase in budgetary allocations to the health sector,[4] while in Donglan the share allocated to preventive health care has declined. In 1981, anti-epidemic and MCH institutions in both counties were funded almost entirely by government subsidies. In some preventive facilities, government subsidies are now insufficient to pay even the whole salary and welfare bill of the staff. Additional expenditures on staff and operational expenses must be met with funds from a variety of other sources. During the 1980s, preventive facilities were encouraged to raise their own revenues by charging fees. Preventive facilities have therefore assigned part of their staff to providing revenue generating services.

[4] Since participating in a UNICEF-sponsored MCH programme in 1990, various levels of government and village committees have invested ¥730,000 and UNICEF has provided US$50,000.

Some facilities have been more successful than others in generating their own revenues to supplement government subsidies (Figures 1 and 2). For example, in 1994 self-raised revenues accounted for 39 per cent of the total revenues of Xunyi's anti-epidemic station. The anti-epidemic station provides outpatient clinic services and earns revenue from food and water inspection for local businesses. Self-generated funds have been used to purchase new equipment with which to increase the scope of remunerated services provided. Because the county hospital's laboratory equipment is poor, the anti-epidemic station has developed its own laboratory work, which in 1994 earned over ¥50,000 in net revenue. Expenditures on equipment purchases, and maintenance and construction of physical infrastructure accounted for a large share of the anti-epidemic stations' total expenditures in 1992 (Figure 1).

Nevertheless, the anti-epidemic station in Xunyi still actively undertakes rural preventive work. The revenue derived from the pre-paid immunisation insurance system is an incentive to do this. A rough calculation based on the birth rate and immunisation coverage rates suggests that in 1992 total revenue from the prepaid immunisation insurance scheme was ¥39,000. Of this sum, the county anti-epidemic station, township health centres and village health stations each shared 30, 20 and 50 per cent respectively. This scheme provided four per cent of the anti-epidemic station's total income in 1992, covering the material, transport and labour costs of the programme.

In some other facilities insufficient funds have been allocated to cover operational expenditures and the coverage of preventive programmes in rural areas has not been maintained. For example, in 1992 Donglan's anti-epidemic station received a smaller government subsidy than its counterpart in Xunyi, and was less able to generate revenue (Figure 1). In 1992, the average incomes of staff in Donglan's anti-epidemic station (¥262) were lower than in Xunyi's (¥285), but the number of personnel in the former was one third larger. Total expenditures on staff remuneration were much higher in Donglan's anti-epidemic station than in Xunyi's, which left little funds for operational expenditures (Figure 1).

[5] Other researchers have found that preventive facilities in some areas do not report all their revenues in order to avoid a cut in the government grant.

In 1992, the reported income of Donglan's anti-epidemic station was only two-thirds of its reported expenditures. It is not clear how this additional spending was financed, but this fact provides some indication of the severe financial difficulties faced by this facility.[5] The costs of providing preventive services in rural areas are also higher in Donglan. Donglan has a larger population than Xunyi, but its population density is lower, and transport is inconvenient owing to the mountainous terrain. Faced with these financial and logistical difficulties, the anti-epidemic station has assigned more personnel to providing other remunerated services.

Similar problems have affected the MCH centre in Donglan, whereas Xunyi's MCH centre derived most of its income from government grants (Figure 2). In 1992, Xunyi's MCH centre reported higher expenditures than its income, and it is not clear how this was financed. However, a small proportion of expenditures were allocated to operational activities.

County government allocations to township health centres in Donglan are no longer sufficient to cover operational expenditures, and often no direct financial support is given for preventive health care activities at the village level.

5 Discussion and Conclusions

From the preceding analysis it can be seen that preventive health care services have developed unevenly in these two poor counties. Compared with Xunyi, utilisation of preventive and MCH services in Donglan is much lower, and key indicators of poor health are correspondingly higher. This study has explored two explanations for these differences. The first relates to the organisation and operation of the three-tier network throughout the counties. The second concerns levels of funding and its allocation between different uses.

In Donglan, county and township facilities do not support the work of lower level facilities. Immunisation and MCH services are not regularly provided at the village level. The lack of organisational links also affects statistical data collection and reporting. In Xunyi, support and supervisory links between facilities at different levels are important in ensuring that services are adequately provided to villagers. Village health workers are integrated into

Table 3 **Revenue and expenditures of county anti-epidemic stations and MCH centres (1986-1992)**

	Anti-epidemic stations				MCH centres			
	1986	1988	1990	1992	1986	1988	1990	1992
Av. no. staff	32	36	37	40	18	22	25	28
Subsidy/revenue (%)	77	56	51	44	68	48	49	33
Staff payments/subsidy (%)	47	56	75	81	56	70	75	94

Source: MoPH (1994)

the county preventive and MCH systems, and township health centres provide a link between the county and village levels.

Rural preventive services in Donglan are inadequately funded. Government grants to county and township facilities do not even cover staff incomes, let alone operational costs. Some facilities are overstaffed in relation to the services they provide in rural areas. Pressures on cost recovery lead some facilities to assign a large proportion of staff to revenue generating activities, but the revenues generated are not used to fund the provision of services in rural areas.[6]

Table 3 suggests that similar financial pressures are common in preventive facilities in other counties. Government grants have fallen as a proportion of facilities' revenues. Staff numbers have risen, so an increasing proportion of government subsidies has been spent on staff remuneration. The case studies presented in this article demonstrate the ways in which the responses to these pressures can differ.

In Xunyi, preventive facilities have been more successful in raising revenue. The need to raise revenue by providing remunerated services may explain the large proportion of expenditures allocated by some facilities to the purchase of equipment and construction of health facility buildings. Nevertheless, preventive facilities in Xunyi have allocated staff and financial resources to programmes in rural areas. Government grants are an important source of income in Xunyi's preventive facilities. Discussions with local officials in Xunyi indicated that participation in the UNICEF programme contributed significantly to engendering political commitment to the allocation of funds to rural preventive services. County governments in poor areas face fiscal constraints (Zuo 1997), so increased funding from external sources will be necessary.

This article also shows that increased funding must be accompanied by management changes to ensure the adequate financing of preventive services in rural areas. In Xunyi, contracts between different levels of government and with preventive facilities include targets relating to service provision in rural areas. This increases the emphasis of governments and facilities on the financing and monitoring of rural preventive service provision.

On the basis of the analysis of the situation in these two poor counties, the following measures should be taken to improve preventive health care in poor rural areas.

i **Strengthen governments' roles and the regulatory framework.** Where county and township governments emphasise the development of preventive health care services, those services are better provided. Targets relating to preventive health care should be included in the plans of each level of government, and in contracts between levels of government. This would ensure that the distribution of responsibility for meeting targets over a given period is clearly defined, and provide a means for the assessment of progress. Government funding for preventive services should be increased. Higher levels of government should allocate regular earmarked funds for specific activities to preventive facilities.

[6] This study has not evaluated the impact of cost-recovery through revenue generation on the other public health activities of county preventive facilities.

ii **Improve the efficiency of resource use**. Some preventive facilities have insufficient funds to support operational activities. Since additional inputs are only used to cover staff salaries, the available resources are not fully utilised and services are not provided in rural areas. Increased funds should be used to raise the level of preventive service provision in rural areas. Increases in staff numbers should be limited and finances should be audited to ensure that funds are used to meet the basic health care needs of the rural population.

iii **Strengthen the organisation of health care services**. Improving the access of rural populations to preventive services is facilitated by the provision of services at the village level. Where village health stations are lacking, they should be reconstructed, funded from a combination of government, collective and individual sources. In areas where village level services are weak, township health centres should send personnel or set up stations to provide curative and preventive services. This will both ensure the provision of health care services and be an efficient use of existing resources.

The delivery of adequate services to the rural population depends also on the relationship between facilities within the three-tier network. County and township institutions should establish appropriate regulatory systems, and be responsible for the management and training of lower level health workers. The management of private doctors must be improved where they are the major providers of services at the village level, to encourage them to provide preventive services.

iv **Improve health education and raise health awareness**. The rural population has little understanding of factors causing ill-health, which contributes to low levels of utilisation of preventive and MCH services. Improving health education to promote the utilisation of preventive health care services is important if the incidence of disease and mortality are to be lowered. Village health workers are closest to the majority of the rural population, so they should receive training and support in undertaking health education activities.

v **Improve information and statistical work to support management.** Data collection and statistical work are the basis for identifying the health problems of the rural population and ensuring that preventive health care services are appropriately provided. This study found that basic data collection was poorly organised and was conducted to varying degrees of thoroughness. In some cases, improving this aspect of preventive work will require the training of specialised personnel, but in general the organisation and monitoring of data collection and statistical reporting should be improved.

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