# FINANCING HEALTH CARE IN POOR RURAL COUNTIES IN CHINA: EXPERIENCE FROM A TOWNSHIP-BASED CO-OPERATIVE MEDICAL SCHEME[1]

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**Summary**

The economic reform programme in China, which started in the late 1970s, has had a major impact on rural health services. The replacement of collective agricultural production by the 'household responsibility system', lead to the widespread collapse of collective-funded Co-operative Medical Schemes (CMSs), which at that time assisted farming households with health care costs in more than 90% of villages in rural China. The design and implementation of new forms of CMS which are compatible with the economic reform has become a central focus of rural health policy. With strong political support from the central government, which has proposed that most rural areas should have such schemes in place by 2000, widespread CMS implementation is proceeding at considerable speed. Effective regulation, based on systematic monitoring and evaluation methodologies will be essential if these new schemes are to be sustainable. This paper examines the issues involved using empirical evidence from an evaluation based on the logical framework approach of an experimental scheme which was initiated in Hechi Prefecture, Guangxi Province in 1995.

The study findings suggest that the very restricted forms of CMS now being introduced on a widespread basis to meet government targets may have some merit in terms of the organisation and regulation of health services and could represent a valuable first step towards a viable financing option. However, the focus on village based schemes, with minimal levels of funding and consequent inability to provide assistance with drug costs or treatment at higher level facilities, raises considerable doubts as to their sustainability when the current enthusiastic support provided by local government declines. The case study reinforces the point that the establishment of a CMS can do little to overcome basic deficiencies in service provision. It also indicates that such schemes will not solve the problem of access for the poorest households in the absence of specific and effective mechanisms to finance their inclusion.

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## 1 INTRODUCTION

The economic reform programme in China, which started in the late 1970s, has had a major impact on rural health services. Though aggregate health resources have gradually increased, there have been considerable problems in terms of the financing and organisation of services. The replacement of collective agricultural production by the 'household responsibility system', drastically reduced financial support for Co-operative Medical Schemes (CMSs), which at that time assisted farming households with health care costs in more than 90% of villages in rural China (Feng et al. 1995). Most collapsed, and farmers had to pay for medical care out of their own pockets on a fee-for-service basis. With the rapid increases in the cost of medical services through the 1980s, many farmers, especially those in poorer areas, had difficulty in obtaining even basic health care (Gu et al. 1993 ).

By the late 1970s, rural China had established a highly structured, 'three-tiered' health service. Around 85% of villages had a health station staffed by 'barefoot doctors', mainly farmers who received a short training and then worked part-time to provide basic curative and preventive care in return for payments from collective funds. Townships had a health centre that provided referral services and supervised preventive activities, and at county level there was a hospital and specialised institutions that organised preventive programmes. These higher level services were mainly funded by government. After 1978, village level collective funding largely ceased, the number of health stations run by village collectives rapidly declined and most of the barefoot doctors effectively became private practitioners. In addition, higher level facilities were required to seek an increasing share of their funding from fee incomes (Bloom and Gu, 1997).

The establishment of new health financing systems is regarded as a key issue for health sector reform in China. In rural areas, the CMS approach is seen as having played an important role in providing access to basic health services at a reasonable cost and the design and implementation of new forms of CMS which are compatible with the economic reform has become a central focus of policy. With strong political support from the central government, which has proposed that most rural areas should have such schemes in place by 2000 (Chinese Communist Party and State Council, 1997), widespread CMS implementation is proceeding at considerable speed. For example, in Hechi Prefecture, Guangxi Province, where the current exercise is based, it is intended that 30% of villages will be covered by new CMSs by the end of 1997, and 100% by 2000. Effective regulation, based on systematic monitoring and evaluation methodologies will be essential if these new schemes are to be sustainable. This present paper aims to provide empirical evidence on this issue using material from the evaluation of an experimental scheme carried out in 1995-1996.

The implementation of experimental schemes was part of a collaborative research programme between Shanghai Medical University and the United Kingdom Institute of Development Studies. In 1993 and 1994, a baseline survey was conducted in three poor counties in the western part of China: Donglan county in Guangxi province, Shibing county in Guizhou, and Xunyi county in Shaanxi. This survey aimed to collect data on socio-economic conditions, population, health resources, and health service provision and utilisation. The data came from routine reports submitted by health facilities, a household interview survey, focus group

discussions and key informant interviews. In 1996, at the request of local officials, two experimental CMSs were implemented, one in Wuzhuan township in Donglan, and the other in Yuandi township in Xunyi. This paper draws on an initial evaluation the Wuzhuan CMS to discuss the possibilities and limitations of such schemes. Section 2 provides a description of the scheme. Section 3 discusses evaluation methodologies and section 4 presents the results. Finally, section 5 summarises the major outcomes of the scheme, and raises general policy issues.

## 2 THE CO-OPERATIVE MEDICAL SCHEME IN WUZHUAN TOWNSHIP

### 2.1 Location

Donglan is located in the north-western part of Guangxi province. It occupies a total area of 2465 square km., of which 94 per cent is mountainous. Arable land per capita is only 0.64 mu (0.043 hectare). Donglan is a nationally designated poor county. In 1992, the average rural net per capita income was ¥326, only one third of the national rural average level (State Statistical Bureau 1995). In 1993, among 148 administrative villages of Donglan, there were 104 rural health workers, mostly private practitioners, and only 8 officially designated village health stations.

Within Donglan, Wuzhuan is a comparatively rich township, with an average rural net income per capita of 756 yuan in 1993. Almost all the rural population were employed in the agricultural sector, with most rural households reliant on rice production. There were few off-farm employment opportunities. The health centre at Wuzhuan was staffed by 26 doctors and workers. Among nine administrative villages, there were seven rural doctors, all private practitioners.

### 2.2 Findings of the 1993-1994 baseline survey

The baseline survey in Donglan indicated that village level health services gave considerable cause for concern. The percentage of the population reporting illness but not visiting a health worker was higher than the average level in poor rural China, and ‘financial difficulty’ was the most common reason given. Health providers earned their income almost entirely from the sale of drugs. They were in general not willing to undertake preventive care activities, given what they regarded as insufficient incentives provided by the county health bureau. They also maintained minimal records. Typically there was no registration of outpatient visits, and no prescriptions or invoices for fees were provided.

### 2.3 Design of the CMS

The main findings of the baseline survey were reported at meetings in Donglan which included representatives of cadres, health professionals, and farmers. They requested assistance to design and implement a CMS which would cover primary health care costs, with particular emphasis on outpatient services, immunisation, and maternal care at village level. It was seen as of great importance for local people to have access to good basic health care services in their own villages, given the considerable difficulties

involved in travelling in this mountainous region. Wuzhuan township was selected as the site for implementation of an initial experimental scheme.

Researchers from Shanghai Medical University designed a number of possible CMSs with varying service coverage, premiums and reimbursement ratios. Based on data from the baseline survey (see appendix 1), they recommended a premium of ¥9 per person per year, with ¥1 provided from county funds and ¥8 from individuals. This was intended to cover free immunisation, free maternal care, and partial reimbursement of the cost of outpatient services at village level and, on referral, at the township health centre. However, cadre members and health professionals in Donglan and Wuzhuan feared that individuals would be reluctant to pay ¥8, around 1% of per capita income in 1993. It was decided by the head of the township government that the individual contribution should be reduced to ¥4, and in consequence that outpatient care at township level should be excluded. Donglan County Government agreed to the proposal that they should contribute ¥1 to a preventive care fund for each member of the CMS.

As indicated above, the income of village health workers in Wuzhuan derived mainly from drug sales. Under Ministry of Health regulations, they could retain a mark-up of 10-15% on the cost of Western drugs, and 20-25% on that of traditional Chinese drugs. In general, drug fees account for around 90% of outpatient fees at village level (Gu and Yu 1995). In order to decrease the reliance on drugs and encourage health workers to provide more consultations and simple treatments, for example of minor injuries, the researchers and local health authorities agreed that the profit from drug selling should be decreased after implementation of the CMS, and that registration and treatment fees would be fully reimbursed. The authorities also decided, against the advice of some researchers, that injection fees would be reimbursed, given the local preference for injections over oral drugs. This so-called 'three-fees' approach to CMS has been widely adopted throughout rural China.

### 2.4 Key points of the CMS (for details see appendix 1)

The proposed CMS thus had the following main features:

- Principles: not-for-profit, voluntary membership, multiple assistance, democratic management.
- Fund sources: county and township government, village collective, individual households.
- Membership: open to all rural households in Wuzhuan. Membership is by the household as a unit to reduce adverse selection between people of different sexes, ages, and health situations.
- Premium: ¥5 per member, with ¥4 from individuals and ¥1 from county government; township government and village collective to pay premiums for extremely poor households.
- Services covered and reimbursement: free registration, treatment and injection fees at village level; free immunisation for members no more than seven years old; free maternal care for pregnant women members, including prenatal and postnatal care, and delivery.
- CMS management: committee established at township level with members from township government departments and health facilities; one full-time management cadre.

- Controlled drug supply: village doctors are only allowed to buy drugs from the township health centre; drugs are purchased and sold at fixed prices.
- Village doctor management: prescriptions must be handed to the township CMS management committee for examination and reimbursement of the three-fees; one third of the difference between wholesale and retail price of drugs will be paid to the committee which will redistribute the money to village doctors at the end of the year as a performance bonus.

### 2.5 Implementation

In the autumn of 1995, the Hechi Prefecture Health Bureau made funds available to support the establishment of village health stations and to begin preparations for the establishment of the CMS in Wuzhuan. Following the summer harvest, cadre members from the prefecture and county health bureaux went to Wuzhuan to publicise the CMS, explain its operation, and encourage farmers to participate. From September, farmers started to pay their share of the premiums. Most paid in cash, while a small number were allowed to hand over a corresponding amount of grain.

There were a total of seven private practitioners in the nine villages of Wuzhuan. Because such practitioners usually work only in their own village, three villages, Luanpo, Dongli, and Hongli, which had no health workers, were not included in the CMS. Another village, Zhonghe, is very close to Wuzhuan town and their private practitioner had his clinic there, only five minutes walk from the township health centre. Given the complications this would have introduced, this village was also excluded. Private practitioners in Shangxu, Linle, Baxue, and Lale villages were all willing to follow the regulations of the CMS and supported its implementation. One of two private practitioners in Nalie village was selected by the CMS management committee for inclusion in the scheme, while the other was allowed to continue in practise as previously. All five selected private practitioners signed contracts with the committee and each of them made available one room of their own houses as a village health station. Donglan County Health Bureau drew up management regulations, and put them on the wall of each station. They also printed special prescription forms and invoices to be used within the CMS (appendix 2).

Wuzhuan CMS management committee was established by the Township People's Government, with its head acting as director. Committee members were recruited from township government departments. A full time official, paid by Donglan County People's government, is in charge of routine management, and the accountant of Wuzhuan Township Health Centre is employed by the committee on a part time basis. In each of the five villages where the CMS was implemented, a CMS management group was organised. This group consisted of the head of the village, the village accountant, a village woman cadre and representatives chosen by villagers.

### 2.6 Monitoring and evaluation

Following the implementation of the CMS in November 1995, researchers from Shanghai Medical University visited Wuzhuan every three months to monitor the intervention. They gathered information on the utilisation of village health stations and fees paid, use of the CMS fund, CMS management activities, and attitudes of village cadres, health workers and villagers to the scheme. They also conducted an initial evaluation study in January 1997. Quantitative data were collected through a household interview survey and a health facility survey, while qualitative data were obtained from focus group discussions and key informant interviews.

The logical framework approach was adopted in the evaluation study. This views any project as having four basic components: *inputs* which produce *outputs* which aim to achieve a specific *purpose* which will assist in the attainment of a development *goal* (Coleman 1987, McLean 1988). In the present case, the staff, equipment, and funds necessary for the design and implementation of the CMS are treated as project inputs. The output is the CMS itself, which was intended to achieve a number of purposes: increased access to outpatient care at village level, increased access to preventive care, and reduced cost of outpatient care. The goal of the project might be expressed as 'reducing ill-health and suffering among the rural population, while lightening the burden of medical fees'. A key element of the logical framework is the definition of a detailed set of measurable indicators to assess project success or failure (McLean 1988). The indicators used to measure use of inputs, production of outputs and attainment of purposes in the CMS evaluation are set out in figure 1. Goal attainment can only be properly assessed in the longer term.

## 3 EVALUATION METHODOLOGY

### 3.1 The household survey

It was decided to focus the evaluation study on villages which had been covered in the baseline survey of 1994. The sample selected for this survey included three villages in Wuzhuan, with 100 households randomly sampled in each. However, only two of these villages, Shangxu and Nalie, were included in the CMS while the third, Luanpo, was excluded because of the absence of a health worker. Follow-up interviews in these two villages were carried out in April 1996 and January 1997, and a total of 186 households were interviewed on all three occasions. Of these, only 56 were found to be covered by the CHCS. To increase the range of CHCS members in the evaluation, an additional 100 households covered by CHCS in each village were randomly sampled. Thus, in January 1997, 386 households were interviewed, of which 256 were CHCS members. The sampled population was 1663, with 1002 CHCS members and 661 non-CHCS members.

The baseline survey in 1994, collected data on five areas:

- Household size, assets, income, expenditure, distance to the nearest health facility, and expenditure on medical care in 1993.
- For each household member: name, sex, nationality, age, educational level, marital status, occurrence of illness during the previous two weeks, use of hospital care in 1993, occurrence of, and reason for, non-admission to hospital in spite of referral by a doctor.

- For those who reported at least one episode of illness during the last two weeks: days of sick leave, days in bed due to illness, number of visits to a health worker, expenditure on out-patient care, non-use of needed services, and reason for any non-use of services.
- For those admitted in hospital in 1993: number of admissions, level of health facility, days of stay in hospital, result of diagnosis, and health status on leaving facility.
- For child-bearing married women: pregnancy, delivery of baby, ante natal services used, and contraceptive methods adopted.

The follow-up interviews in 1996 and 1997 gathered similar information on sickness and health service utilisation, and also included questions on CMS membership, satisfaction with the CMS or reasons for non-participation, number of visits with fees reimbursed, and amount of reimbursement. The head of the household, or spouse in their absence, was interviewed by a student from the county health school, who had received 2-3 days training provided. Members of the research team were responsible for supervising and monitoring the quality of the survey in the field and checked each completed questionnaire. If errors and inconsistencies were found the household was re-interviewed. Computer data entry and consistency checking was carried out by medical school students under the supervision of the researchers.

### 3.2 Other evaluation activities

In addition to the household survey, a number of additional studies were undertaken. The five village health stations covered by CMS were investigated to collect data on the number of outpatient visits, total and composition of fees collected, and the income earned by village doctors from these services. The researchers also conducted surveys in county and township preventive facilities to obtain information on immunisation and maternal care coverage rates. A study of CMS management collected data on fund revenues and expenditures, the possession and use of CMS cards, and management costs, including payments for management cadres.

A series of focus group discussions and key informant interviews were undertaken with relevant government officials, health workers, management cadres and farmers. These ascertained their opinions as to the successes and failures of the CMS, how management might be improved, and the willingness of farmers to remain in the scheme in the following year.

## 4 RESULTS

As described above, the evaluation was based around a predetermined logical framework The completed version of this framework is presented in figure 2.

### 4.1 Staffing

At each of the five villages within the CMS, one rural doctor was contracted to provide health services. These services were available to all villagers, irrespective of membership in the scheme. One staff member from Donglan County Anti-Epidemic Station was allocated to assist in maintaining the cold-chain for vaccines, and a preventive health worker of Wuzhuan Township Health Centre was given overall responsibility for the immunisation programme for children under seven years old. A doctor from Donglan County MCH Station organised maternal care services with assistance from the obstetrician at Wuzhuan Township Health Centre.

CMS management organisations were established at both township and village level. Most members of the management teams were part-time with the exception of one cadre who acted as head of the secretariat of Wuzhuan CMS Management Committee. This person took charge of routine CMS management activities.

### 4.2 Funding

The design of the scheme envisaged that of the membership premium of ¥4, 72% was required to meet expected reimbursement, 18% as a contingency fund and 10% to meet management costs. Given the membership of 3,355 people, the CMS generated a total revenue of ¥13,420 from this source. The county government provided another ¥3,355 as a preventive care fund. However the county health bureau, to whom this payment was made, did not make it available to the CMS Management Committee. Neither the township government nor village collectives made any contribution, as previously agreed, to assist membership by poor households. As a government employee, the ¥7,200 salary of the full-time management cadre was paid by the county government (table 1).

**Table 1: Sources and purposes of CMS fund**

| Sources | Purposes | Amount (yuan) |
|---|---|---|
| Individuals | outpatient care | 9,662 |
| Individuals | contingency fund | 2,416 |
| Individuals | management fee | 1,342 |
| Government | preventive care | *3,355 |
| Government | salary of full-time manager | **7,200 |
| Government | prescription and invoice publication costs | **1,342 |

Source: Wuzhuan CMS Management Committee

Notes: * Donglan County Government provided ¥3,355 yuan to the county health bureau for preventive care, but this was not passed to the CMS Management Committee.

** not included in the original CMS design

### 4.3 Equipment and related expenditures

The county health bureau published CMS regulations, cards for each household covered, prescription forms for the five village doctors, and invoices for the management committee. To demonstrate its support of CMS, Hechi Prefectural Health Bureau provided financial support for the five village health stations to purchase drug cabinets, desks and chairs, and some basic medical equipment, such as sphygmomanometer, stethoscope, and steriliser.

### 4.4 Coverage of the CMS

There were 1,828 households in the five villages, of which 984 (54%), participated in the CMS. The total de-jure population was 8,028, of which nearly one third had left home to seek employment in the city (*da-gong*). Of the 5,621 remaining, 3,355 (59.7%) were covered by CMS. There were major differences between villages (table 2). Coverage ranged from 79% of households in Lale to less than 40% in Baxue. One possible explanatory factor was that Lale was a small village of 160 households in a single valley, while Baxue was considerably larger and spread over several valleys. Many villagers were not interested in CMS because their houses were closer to other health facilities than to their own village health station.

**Table 2: Coverage of CMS in Wuzhuan**

| Village | number of households | households covered by CMS | households covered (%) | population | population covered by CMS | population covered (%) |
|---|---|---|---|---|---|---|
| **Baxue** | 471 | 160 | 34.0 | 1430 | 539 | 37.7 |
| **Shangxu** | 367 | 197 | 53.7 | 1128 | 668 | 59.2 |
| **Nalie** | 334 | 223 | 66.8 | 998 | 685 | 68.6 |
| **Linle** | 496 | 277 | 55.8 | 1559 | 1071 | 68.7 |
| **Lale** | 160 | 127 | 79.4 | 506 | 392 | 77.5 |
| **Total** | **1828** | **984** | **53.8** | **5621** | **3355** | **59.7** |

Source: Wuzhuan CMS Management Committee

Data from the household interview health surveys in Shanxu and Nalie, indicated that coverage was quite similar for men and women (table 3). For female villagers, there was also little difference in coverage between age groups, while for male villagers the differences were statistically significant, with the highest levels for those 60 and over. This may relate to a higher demand for services by the aged, but probably also reflects the respect given to male elders.

**Table 3: CMS members and non-members by sex and age**

| Age group | Male covered | Male not covered | Female covered | Female not covered | Total covered | Total not covered |
|---|---|---|---|---|---|---|
| **0-6** | 71 | 42 | 73 | 29 | 144 | 71 |
| **7-14** | 137 | 79 | 126 | 74 | 263 | 153 |
| **15-59** | 469 | 205 | 500 | 192 | 969 | 397 |
| **60+** | 76 | 21 | 80 | 29 | 156 | 50 |
| **Total** | **753** | **347** | **779** | **324** | **1352** | **671** |

Source: 1997 Household interview health survey

The sampled households were allocated to an income category based on their net income per capita in 1993. In 1985, the State Council defined rural inhabitants with per capita net income below ¥150 as extremely poor (State Council, 1989). Using the overall consumer price index for rural residents (State Statistical Bureau 1994), this extreme poverty line was adjusted to give ¥302 in 1993. Households with per capita net income less than this figure are specified as the low income group. The State Council Leading Group of the Anti-

Poverty Programme assessed the net income per capita of all rural residents in poor counties as ¥488 in 1993 (Chen 1994). Sample households with a net income per capita greater than 150% of this figure, i.e. ¥732, are here treated as the high income group. The middle income group thus contains households with per capita net incomes greater than ¥302 and less than ¥732. On this basis, it was found that there were major differences in terms of CMS coverage between income groups, with around half of the high income group joining, just over one quarter of the middle group and only 3 out of 32 poor households (table 4).

**Table 4: member and non-member households net income per capita**

| Net income per capita (yuan) | member households | non-member households |
|---|---|---|
| **<302** | 3 | 29 |
| **303-731** | 24 | 68 |
| **>732** | 29 | 33 |
| **Total** | **56** | **130** |

Source: 1994 and 1997 follow-up household interview health survey

### 4.5 Benefits from the CMS

There were 4,774 visits to the five CMS village doctors, an average of 2.2 visits per member per year. This varied from 0.6 and 0.7 in Lale and Linle, to 3.1 in Shangxu (table 4). This was partly a reflection of the confidence which local farmers had in the Shangxu doctor, who provided a full-time service, as compared to the less popular doctors of Lale and Linle who only practised on a part-time basis. In the latter village, it was found that a number of CMS members preferred to use other rural doctors even though this meant that they could not claim reimbursement. By the end of October 1996, reimbursements for outpatient care totalled ¥6,969, an average of ¥2.08 per member. The level of reimbursement is directly related to the number of visits, and thus the comparable rates were highest in Shangxu, ¥3.73, and lowest in Lale, ¥0.8 (table 5).

**Table 5: Reimbursement for outpatient care services by village**

| | Nalie | Baxue | Shangxu | Linle | Lale | Total |
|---|---|---|---|---|---|---|
| **outpatient visits** | 955 | 867 | 2,053 | 777 | 1240 | 4775 |
| **annual visits per member** | 1.4 | *1.9 | 3.1 | 0.7 | *0.6 | *2.2 |
| **total reimbursement (yuan)** | 1,543 | 1,464 | 2,492 | 1,310 | 158 | 6968 |
| **reimbursement per member** | 2.25 | *3.3 | 3.73 | 1.22 | *0.8 | 2.21 |

Source: Wuzhuan CMS Management Committee
Note: *Annualised estimates based on part year data:
Baxue: January 1996--October 1996, 10 months
Lale: April 1996--October 1996, 6 months

Unlike the registration fees, reimbursement of injection and treatment fees is influenced by prescription behaviour. Under the CMS, village doctors were encouraged to earn income from providing services as against prescribing drugs. In 1993, drug fees amounted to 90% of total fees in village health stations (Gu and Yu 1995). Under CMS this was reduced to 76% (table 6).

**Table 6: Average outpatient fee per visit and reimbursement by village**

| | Nalie* | Baxue | Shangxu* | Linle | Lale | Total |
|---|---|---|---|---|---|---|
| **Outpatient fee per visit (yuan)** | 10.41 | 1.46 | 3.03 | 4.18 | 3.85 | 5.54 |
| **of which: (%)** | | | | | | |
| **drug fee** | 85 | 80 | 61 | 67 | 75 | 76 |
| **reimbursed three-fees** | 15 | 20 | 39 | 33 | 25 | 24 |

Note: * Based on the data of 1997 household interview health survey, the self-reported outpatient fee per visit was ¥13.45 and ¥6.26 in Nalie and Shangxu respectively.
Source: Prescriptions in the five villages

### 4.6 Use and balance of the CMS fund

By the end of October 1996, ¥6,968 had been reimbursed, 72% of the fund allocated to this purpose. However, because two villages had implemented the CMS somewhat later than the others, these figures are adjusted in table 7 to produce an annualised estimate of 77%. As can be seen from this table, the under-utilisation was due to the low level of reimbursement in Lale and Linle, for the reasons discussed above.

**Table 7: Income and expenditure of the CMS allocated outpatient fund by village**

| Outpatient fund | Nalie | Baxue | Shangxu | Linle | Lale | Total |
|---|---|---|---|---|---|---|
| **Income** | 1552 | 1924 | 1973 | 3084 | 1129 | 9662 |
| **Expenditure** | 1552 | *1756.8 | 2492 | 1310 | *316 | *7427 |
| **Expenditure (% of income)** | 99 | *0.89 | 126 | 42 | *0.28 | 0.77 |

Source: Wuzhuan CMS Management Committee
Note: *Annualised estimates based on part year data:
Baxue: January 1996--October 1996, 10 months
Lale: April 1996--October 1996, 6 months

The high level of expenditure in Shangxu reflects two factors. The first is the popularity of the rural doctor, and the regard in which he was held. The second, unfortunately, is that he was found to have modified his prescribing behaviour in order to increase his income from the scheme. The 1993 study indicated that doctors tended to over-prescribe by writing 'Big Prescriptions', with large quantities of drugs on each, to increase their income from drug fees (Yu et al. 1996). After introduction of CMS, the Shangxu doctor started to write multiple 'Small Prescriptions' (*feng-jie-chu-fang*), with smaller quantities of drugs, in order to increase reimbursements of registration fees.

It was also found that almost all of this doctor's prescription included injections. This was probably also motivated by the availability of reimbursement for injection fees, but it was also the case that this practice was in line with preferences of the local people, and probably contributed to his popularity. In focus group discussions, many villagers claimed that injections had a more immediate effect and were much more convenient than taking drugs orally three or four times a day.

### 4.7 Reimbursement procedures

Village doctors charged only for drugs when CMS members sought outpatient care. They would then claim reimbursement for registration, treatment and injection fees from the CMS using their medical notes and

prescription forms. The CMS manager would collect these from village health stations at the end of each month for examination, and reimbursements could be claimed by the doctors ten days later. When interviewed, all the village doctors indicated their acceptance of this procedure.

The management committee issued a card for each household covered by CMS, and in the evaluation 100% of member households were found to have this card. Under CMS regulations, whenever a member visited a doctor, they were required to produce this card to avoid non-drug fee payments. In practice, this rule was not consistently followed. Many people claimed that they had forgotten their cards, but insisted on their rights as members. The village doctors in general did not insist on seeing the card, as they knew that their later claim for fee reimbursement would not in practice be challenged. Both the CMS management and a number of members reported many instances of non-members obtaining benefits as a result of this lack of effective monitoring.

### 4.8 Members satisfaction with the CMS

Based on data from the household survey, 70% of 229 CMS member households interviewed expressed their satisfaction with CMS and just 5% stated that they were dissatisfied. (table 8). Of 163 households who claimed under the scheme, 75% expressed satisfaction as compared with 58% of those who did not claim.

**Table 8: Members' satisfaction with the CMS**

| | households | % |
|---|---|---|
| **Satisfied** | 161 | 0.70 |
| **Neutral** | 51 | 22 |
| **Not satisfied** | 11 | 5 |
| **No comments** | 6 | 3 |
| **Total** | **229** | **100** |

Source: 1997 Household Interview Health Survey

The most common reason given by those who did join the CMS, 61% of the 135 households interviewed, was that they did not understand the system. Only 12% said that they were unwilling to participate (table 9).

**Table 9: Reason for not participating in the CMS**

| | households | % |
|---|---|---|
| **Not understanding CMS** | 83 | 61 |
| **Not willing to join** | 16 | 12 |
| **Not expressing an opinion** | 36 | 27 |
| **Total** | **135** | **100** |

Source: 1997 Household Interview Health Survey.

### 4.9 Utilisation of village outpatient services

The percentage of people reporting illness during the two weeks prior to the survey was similar for CMS members and non-members at around 10% (table 10). There were, however, major differences in utilisation

of outpatient care services. The number of visits to a health worker per 100 persons by members was 13.7 as compared to 8.6 for non-members. This was in large part due to a much higher utilisation of village health stations by members, which was only partly offset by the greater use of private practitioners by non-members. These results would seem to indicate that the CMS provided a considerable incentive to use the associated village health station.

**Table 10: Illness and consultation rates in prior two weeks for members and non-members**

| | **CMS members** | **Non-CMS members** |
|---|---|---|
| **percentage of people reporting illness** | 10.7 | 8.9 |
| **number of visits to a health worker per 100** | 13.7 | 8.6 |
| **of which:** | | |
| **private practitioner** | 0.8 | 3.6 |
| **village health station** | 11.6 | 3.6 |
| **township health centre** | 1.0 | 1.2 |
| **county hospital** | 0.3 | 0.0 |
| **total number interviewed** | 1002 | 661 |

Source: 1997 Household Interview Health Survey.

The percentage of people who reported an illness but did not seek medical care was 16% for CMS members as compared to 38% for non-members (table 11). For both groups, the most common reason given for not visiting a health worker was 'self-treatment with western drugs or traditional medicine'. Only 12% of members and 9% of non-members blamed 'financial difficulty'.

**Table 11: Those reporting illness but not visiting a health worker**

| | CMS members | Non CMS members |
|---|---|---|
| **Reporting illness** | 107 | 60 |
| **Reporting illness but not visiting health worker** | 17 | 23 |
| **Percentage not visiting health worker** | 15.9 | 38.3 |

Source: 1997 Household Interview Health Survey

Analysis of the data on 56 CMS member households interviewed in both 1994 and 1997 indicated that the number of visits to a village health station per 100 persons increased from 11.3 to 14.3. The percentage reporting illness but not visiting a health worker decreased from 17.5% to 6.1%.

### 4.10 Outpatient fees at village level

The average self-reported outpatient fees per visit were ¥9.4 and ¥13.7 for CMS members and non-members respectively (table 12). For the village health station, the corresponding figures were ¥7.7 and ¥17.3 yuan. This would appear to indicate that the monitoring of village doctors introduced as a by-product of the CMS reimbursement system may have had an impact in terms of cost control.

**Table 12: Self-reported outpatient fee per visit: members and non-members (yuan)**

| | members | | non-members | |
|---|---|---|---|---|
| | fee | visits | fee | visits |
| **Private practitioner** | 12.9 | 8 | 10.4 | 24 |
| **Village health station** | 7.7 | 116 | 17.3 | 24 |
| **Township health centre** | 22.8 | 10 | 14.6 | 9 |
| **Total** | **9.4** | **137** | **13.7** | **57** |
| **Number interviewed** | | 1002 | | 661 |

Source: 1997 Household Interview Health Survey.

For those member households interviewed in both 1994 and 1997, the average outpatient fee per visit to a village health station was reported as falling from ¥17.2 to ¥9.4 yuan (table 13). For the corresponding households not covered by CMS, the fee per visit increased from ¥17.8 to ¥20.2.

**Table 13: Outpatient fee per visit by households followed up from 1994 survey (yuan)**

| | 1994 | | 1997 | |
|---|---|---|---|---|
| | members | non-members | members | non-members |
| **Village health station** | 17.2 | 17.8 | 9.4 | 20.2 |
| **Township health centre** | 7.9 | 14.6 | 21.3 | 14.6 |
| **Total** | 16.9 | 15.7 | 10.1 | 14.3 |
| **Visits to a health worker** | 49 | 51 | 46 | 51 |
| **Households followed up** | 56 | 130 | 56 | 130 |
| **Population in households** | 282 | 625 | 266 | 627 |

Source: 1994 and 1997 household interview surveys.

To allow for the possibility that some rural doctors were encouraging repeated visits by CMS members, the total fees paid per person over the two weeks prior to the survey was also calculated. For the village health station, the average cost per person for CMS members was ¥11.4, while for non-members the equivalent figure was ¥27.6.

### 4.11 Health management information at village health station

Prior to the implementation of the CMS, the village health station maintained few records. There were no medical notes on outpatient visits, and no invoices or receipts for drug prescriptions and fees. For CMS purposes, a special prescription form was introduced which combined these items, recording information which included the patient's name, sex, CMS card number, diagnosis, prescribed drugs, and fees. One copy was kept by the village doctor and another was handed to the CMS management committee to claim reimbursement. This form was welcomed by CMS members, who indicated that it helped them understand their illness, treatment, and outpatient fees. It also provided a management tool which could be used to monitor utilisation and treatment, providing a potential basis for influencing both provider behaviour and outpatient fees.

### 4.12 Utilisation of immunisation services

According to routine township health centre reports, the immunisation coverage for Wuzhan in 1995 was 92%, and the cold-chain was conducted three times (as compared to the six required by the Ministry of Health). After the implementation of CMS in 1996, reported coverage remained at the same level, and the cold-chain was conducted four times. The lack of improvement was attributed to the absence of effective incentives for preventive health workers. Those at county level were not keen to distribute vaccines from the prefecture to township health centres while those at the township level did not wish to visit rural households, preferring to allocate their time to the more profitable curative care.

Following the implementation of the CMS, additional funds were made available to support immunisation and maternal care. Although the money provided for this purpose had been retained by the county health bureau, the CMS management committee decided to use the contingency and management cost funds to finance preventive care. The heads of the county anti-epidemic and maternal and child health stations agreed that the fund provided by the CMS would be sufficient for free provision of immunisation and maternal care for members, and they promised to strengthen their activities in Wuzhuan. However, there was no obvious improvement by the time of the evaluation one year later.

The one preventive health worker at Wuzhuan Township Health Centre did not undertake routine visits to rural households, as his predecessors would have done in the 1960s and 1970s. He remained at the health centre, requiring farmers to bring their children for vaccination. As a result, some children were not vaccinated at all, while others received only some of those required. There was also some evidence that local people did not fully understand the importance of immunisation. When interviewed, some farmers said that their children did not need to be immunised because they were healthy. Clearly there was considerable scope for preventive health education.

### 4.13 Utilisation of maternal care services

No pregnant women in the villages used the maternal care services available at the health stations because all the five village doctors were male. Local women reported that they were unwilling to see a male doctor for maternal care even though the doctors had received training and had some basic medical equipment. They preferred an experienced older woman as mid-wife This was consistent with findings by Kaufman and others (1997), who argued that lack of female doctors was one of the most important constraints to reproductive health service utilisation in many of the poor rural areas of China.

## 5 CONCLUSION

Are community financing schemes worthwhile and feasible in poor rural China? This question has been keenly debated by health managers, researchers, and decision-makers (Liu et al 1996). The present study would seem on balance to suggest that they are. One year after implementation, utilisation of outpatient services at village level by CMS members had increased, there was evidence of reduced costs and the management of village health services had been strengthened. The CMS premium, ¥4 per member, was less

than 0.5% of the annual net income per capita, and thus affordable for a large majority of local farmers. Over 70% of sampled households which participated in the CMS expressed their satisfaction. Both local government and farmers agreed to continue to implement CMS, and by early 1997 sufficient funds had been raised for a second year.

The CMS also appears to have provided at least a useful first step towards more rational drug use by village doctors, controlling the growth of health care fees and encouraging the provision of additional services. The establishment of a reimbursement scheme and associated performance related bonus system (even though very limited in scope) has lead to the introduction of a simple but apparently useful monitoring procedure which can be used to regulate the activities of health providers, even though the extent of such regulation appears at present to be fairly restricted. In addition, village doctors are now required to purchase drugs only from the township health centre, mainly to prevent the use of drug traders which might compromise the quality of supply. Again, this limitation to a single source of supply could facilitate the introduction of additional procedures for the monitoring and control of prescribing behaviour.

On the other hand, the scheme failed to improve the provision or utilisation of immunisation and maternal care services. The incentives to health workers to actively promote preventive services clearly proved insufficient. While they were willing to provide these services at the health station, they were not prepared to travel to rural households, as this would have reduced the time available for the provision of financially more rewarding curative services. Similarly, they did not seem to regard health education as an activity to which they should allocate time, and in focus group discussions simply reported that they were discouraged by the lack of interest in preventive services by local people.

The implementation of CMS clearly requires considerable support from the county government level to ensure appropriate inputs of personnel, equipment and funds. However, the experience in Wuzhuan would suggest that, given the relative autonomy of other institutions, this may not be sufficient. Money provided by the county government to the county health bureau for preventive services was not used for that purpose. Similarly, neither the township government nor any village collectives fulfilled their stated intentions to provide support for poor household to join the scheme.

The survival of the scheme will also depend on continued support from the general population, who provide most of the revenue. At the moment they are expressing satisfaction, but it is clearly too early to say if this will be maintained. There have been many attempts to reintroduce CMS schemes in poor areas since their initial collapse. None have proved sustainable in the medium term. It could be argued that the benefits of this particular scheme are so limited that many people will eventually begin to wonder if membership is really worthwhile, particularly if they experience a situation in which they have to pay high drug fees which are not covered. It should be clearly recognised that the improved information and monitoring procedures described above, though worthwhile and perhaps initially attractive, are unlikely, in themselves, to persuade people to join or continue membership.

Management of the scheme will also need to be improved if confidence is to be maintained. There are strong indications that procedures designed to restrict reimbursements to members were not strictly enforced. If the perception grows that the benefits can be enjoyed without payment of the premium the scheme could run into serious problems. It is also not clear to what extent quality monitoring is really undertaken, or how this might be achieved, given that this would seem to require at least some capacity for assessing the clinical performance of health workers. The enforcement of strict adherence to established treatment protocols would be a possibility, but would raise many additional problems as to competence.

Establishment of a CMS cannot in itself overcome basic deficiencies in service provision. In Wuzhuan, a mountainous area in which travel can be both difficult and time consuming, not every village had a rural doctor. Again, in a region in which women were not prepared to seek maternal care services from a man, there was a complete absence of female rural doctors. Perhaps of more general relevance, Wuzhuan again demonstrates the difficulties of providing access to the poorest households. Even with the apparently extremely modest premium of ¥4 per person, which many would indeed see as far too low to provide a reasonable level of services, the CMS managed to attract only a handful of households with per capita incomes below the poverty line. Given the perhaps reasonable reluctance of relatively poor village collectives and townships to assist such households to join CMS schemes it would seem that funding from a higher level may be the only possible means of achieving this objective.

**Figure 1: Evaluation framework**

| | **Selected indicators** |
|---|---|
| **Inputs** | staff, budget, equipment |
| **Outputs** | |
| CMS coverage | overall coverage rate, proportion of CMS members by sex and age-group |
| Benefit from CMS | number of members enjoying reimbursement for outpatient services<br>number of outpatient visits reimbursed per member, reimbursement of outpatient fees per member |
| Revenue allocated for and actual expenditure on curative and preventive services | revenue allocated for curative and preventive services<br>actual expenditure on curative and preventive services |
| Well administrated membership system | proportion of households with CMS cards |
| Correctly functioning reimbursement system | proportion of members carrying CMS card to visit a village doctor, proportion of non-members obtaining reimbursement, average time for village doctors to claim fees |
| Satisfaction of members | percent of members satisfied with scheme for:<br>all members<br>those who had not received reimbursement |
| **Purpose** | |
| Increased access to village outpatient care | percent of members and non-members reporting illness in previous two weeks<br>number of outpatient visits per 100 members and non-members<br>number of outpatient visits to village health station per 100 members and non-members<br>percent of members and non-members reporting illness but not seeking medical care<br>utilisation of outpatient care by member before and after CMS introduced<br>evaluation of medical practice at village level |
| Reduced cost of village outpatient care | expenditure per village outpatient visit by members and non-members<br>expenditure per visit at village level by members before and after CMS introduced |
| Increased access to immunisation | immunisation rates before and after CMS |
| Increased access to maternal care | proportion of pregnant women receiving ante-natal care/delivery care/post-natal care before and after CMS introduced |

**Figure 2. Evaluation indicators**

| Selected indicators | Outcomes |
|---|---|
| **Inputs** | |
| staff | one doctor at each of the five villages of CMS; nine part-time preventive health workers; one full-time manager |
| revenue | ¥13,420 received from individuals<br>(full-time manager's salary , ¥7,200, and equipment costs, ¥1342, provided by county government) |
| equipment | CMS cards, prescriptions, and invoices |
| **Outputs** | |
| coverage rate | 54% of households<br>60% of population; |
| distribution of members by sex | 69% for males<br>71% for females |
| distribution of members by age | 65% of those aged less than 15<br>71% of those aged 15-59<br>76% for those aged 60 and over |
| distribution of members by household income* | 47% of households with income greater than ¥732 per capita<br>26.09 of households with income in range ¥303-731 per capita<br>9.38 of households with incomes less than ¥302 per capita |
| members obtaining reimbursement | 4,744 |
| outpatient visits reimbursed per member | 1.4 |
| reimbursement of outpatient fees/member | ¥2.21 (40% of outpatient fees per member) |
| revenue allocated for curative services, and actual expenditure | ¥9,662 allocated<br>¥6,968 (72%) expended. |
| revenue available for preventive services, and actual expenditure | no revenue or expenditure |
| proportion of households with CMS cards | 100% |
| proportion of members holding a CMS card to visit a village doctor | reports that many individuals obtained reimbursement without presenting a card but no quantitative estimates were obtained |
| proportion of non-CMS members to people enjoying outpatient services reimbursement | reports that non-members enjoying reimbursement, but no quantitative estimates were obtained |
| average time for village doctors to claim fees | 10 days after submitting prescriptions |
| percent of members satisfied with scheme | 70% for all members<br>58% for those not receiving reimbursement |

* Estimates derived from those households followed-up from 1994.

(continued on next page)

**Figure 2: Evaluation indicators (continued)**

| **Purposes** | |
|---|---|
| percent of members and non-members reporting illness in previous two weeks | 10.7% for members<br>8.9% for non-members |
| outpatient visits per 100 members and non-members | 13.7% for members<br>8.6% for non-members |
| number of outpatient visits to village health station per 100 members and non- members | 11.6% for members<br>3.6% for non-members |
| percent of members and non-members reporting illness but not seeking care | 15.9% for members<br>38.3% for non-members |
| number of outpatient visits per 100 member before and after CMS introduced | 11.3% before CMS introduced<br>14.3% after introduction |
| quality of medical procedures at village level | improved practice from an absence of medical notes, receipts, and invoices to routine availability of these items |
| average expenditure per village outpatient visit by members and non-members | ¥7.7 for members<br>¥17.3 for non-members |
| expenditure per visit at village level by members before and after CMS introduced | ¥17.2 before CMS introduced<br>¥9.4 after introduction |
| immunisation rates before and after CMS | no change |
| proportion of pregnant women receiving ante-natal care/delivery care/post-natal care before and after CMS introduced | no change |

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**APPENDIX I**

**DESIGN OF COOPERATIVE HEALTH CARE SCHEME IN WUZHUAN TOWNSHIP**

## 1 Objectives

***1.1 To guarantee access to basic health care by farmers, especially the poor, including outpatient services at village level, part of inpatient services at township level, immunization services for children, aged 0-7, and ante-natal services for pregnant women***

***1.2 To make better use of the health resources at township and village level***

## 2 Design

### 2.1 Principles

- to raise fund from multiple resources under the leadership of the local government, such as
- government, collectives, and individuals, but mainly from the individuals
- to run the CMS for non-profit, and to keep expenditure below income
- to calculate the fund by a village as a unit, and to manage it by a township as a unit
- to participate the CMS voluntarily by a household as a unit
- to make use of the fund fairly and reasonably
- to publish the CMS account regularly for public inspection

### 2.2 Members covered

All rural residents in Wuzhuan township may voluntarily participate.

### 2.3 Services covered

- outpatient services at village health station
- immunization services for children, aged 0-7
- ante-natal care services for pregnant women

### 2.4 Payment for health care services

#### *2.4.1 Prepayment*

If households participate in the CMS and pay premiums, they may enjoy free immunization services for their children, free ante-natal care services for pregnant women, and partial reimbursement of outpatient service fees at the village health station.

### *2.4.2 Fee-for-services*

If a member covered by the CMS visits a health worker at village health station, he/she will only pay drug fees, charged at specified retail prices. Medical care fees, including registration, treatment, and injection fees, will be paid from the CMS fund.

Prior to CMS implementation village doctors sold drugs with a mark-up of 10-17% for Western drugs and 20-25% for traditional Chinese drugs. After CMS, they will pay one third of the difference of specified drug wholesale and retail prices to the CMS management committee, which will re-distribute this as a performance related bonus.

## 2.5 Calculation of the CMS fund

### *2.5.1 Fund for immunization and ante-natal care*

According to data provided by the Anti-Epidemic Station of Donglan County, in 1994 it cost ¥12,000 for each round of the immunisation cold-chain in the whole county. There should be six rounds per year, and Donglan has a population of 270,000. The annual cost is thus ¥0.27 per capita.

In order to encourage rural health workers to undertake immunization, allowances were provided. Each village covered by the CMS has a health station. When the health workers of a station complete each round of immunization services for their village, they will be given ¥40. There are 11 villages in Wuzhuan township, with a population of 16,000. This implies an annual expenditure of ¥0.17 per capita.

Allowing for inflation of 20% this gives a total annual requirement of ¥0.53 per capita.

A village health worker who provides three medical examinations to a pregnant woman will receive an allowance of ¥5. The same amount will be paid to a worker who makes 3 visits to a woman who has recently given birth. Attendance at the birth itself will entail a payment of ¥15. A total of ¥25 is therefore required to provide services for each birth. With a birth rate of 20 per 1,000, there are some 320 babies born in Wuzhuan each year. The total cost per annum is thus around ¥0.5 per capita.

The annual allowance for immunization and ante-natal services was therefore set at ¥1 per capita.

### *2.5.2 Fund for curative outpatient care at village level*

The household interview health survey carried out in 1994 indicated that, including private practitioners and collective health posts at village level, the annual outpatient care fee was ¥28.8 per capita, of which 10% was for medical care fees, and 90% drug fees. Thus the average annual outpatient care fee to be reimbursed by the CMS was around ¥2.88 per capita.

Setting the related premium at ¥4 per capita allows for ¥0.4 as a management fee and ¥0.72 to be allocated to a contingency fund. It was found that the annual growth rate of outpatient fees at township level in Donglan County was 18%. If this figure was taken as an estimate for the annual growth rate of outpatient fees at village level, the 25% ratio of contingency fund to outpatient fee allocation would seem reasonable. The management fee of ¥0.40 per member is around 10% of the total premium.

## 2.6 Sources of the CMS fund

### *2.6.1 County and township governments*

The government is responsible for providing financial support for the provision of preventive services to rural residents. The fund for immunization and ante-natal care, ¥1 per capita, will therefore be raised from governments at both county and township level.

### *2.6.2 Collectives*

There are poor households (Five-Guarantee Households) in Wuzhuan, who cannot afford to pay CMS premiums. The Villagers Committee will be responsible for payment of these premiums from the village collective fund.

### *2.6.3 Households*

Household will join the CMS as a unit, paying the premium of ¥4 per capita.

## 2.7 Management of the fund

The Wuzhuan Township CMS Management Committee will be responsible for fund management. The committee will open a special bank account to deposit the fund. Each village covered by the CMS will have its own fund management record book, which will be used by the committee to record revenues and expenditures.

## 2.8 Control of drug use and cost

### *2.8.1 Drug purchase and distribution*

The township management committee will be responsible for purchasing and distributing drugs for all the villages covered by the CMS. The village health station must not purchase drugs from any other source. Each village health station must stock 80 essential drugs.

### *2.8.2 Drug price and profit*

The village health workers must sell drugs to patients at the prices set by the management committee. These will be posted on the wall of village health station for public inspection.

Village doctors will pay one-third of the price difference between wholesale and retail drug to the management committee. By the end of each year, the village management groups and the township management committee will evaluate the performance of village health workers, and pay a bonus to those who do well in terms of quality and quantity of health services.

## 2.9 Management organization

### *2.9.1 Village CMS management group*

Each village will establish a CMS management group. It will consists of the head of the village, the secretary of the village Communist Party Committee, the village accountant, the head of the village women's committee, and three representatives of the villagers.

This group will have a number of responsibilities, including:

- collecting premium from individual households
- handing the premium to the township management committee
- listening to public opinion
- monitoring the village health workers' performance on the basis of management rules
- evaluating the performance of health workers by the end of each year

### *2.9.2 Township CMS management committee*

Wuzhuan Township CMS Management Committee will be directed by the head of the township. It will include representatives from relevant government sectors, such as civil affair, financing and health. There will be a secretariat attached to the committee. The head of this secretariat will be a full-time manager of the CMS.

The committee will be responsible for:

- calculating the CMS fund
- making decision on collection, distribution, and use of the CMS fund
- purchasing drugs for village health stations
- listing the prices of essential drugs and posting these at the village health stations
- collecting 1/3 of the drug mark-up from village health workers
- monitoring the provision of preventive and curative health care by the village health workers
- evaluating the performance of the village health workers, taking into account the opinions of the village management groups, and paying bonuses
- formulating CMS management regulations and rules.

## 2.8 Payment for village health workers

At the end of every month, village health workers will hand their outpatient records for inspection by the management committee, which will reimburse registrations, injections, and treatment fees. They may charge drug fee when they see patients. Two-thirds of the drug mark-up may be retained.

When village health workers undertake immunization or ante-natal care, they should record this activity on both their own report forms and the CMS card of each household. The management committee will pay allowances to them on the basis of these records.

At the end of each year, the management committee will assess the work of village health workers, and pay bonuses on the basis of the quality and quantity of services provided by them.

**ANNEX II: CMS PRESCRIPTION FORM**

No. CMS card.....
Name..... Sex.... Age... Home address...
Diagnosis....
Drugs prescribed .....

Date:..... Doctor .....(Signature)

---

Fees:

Registration fee...
Injection fee ....
Treatment fee ....
sub-total

Drug fee ....
Total