RESEARCH REPORT

HEALTH CARE SEEKING BY THE POOR IN TRANSITIONAL ECONOMIES:

THE CASE OF VIETNAM

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INITIALS AND ACRONYMS

CHS	commune health station
CPC	commune people's committee
GSO	General Statistical Office
HIV	human immunodeficiency virus
IDS	Institute of Development Studies
OTC	over the counter
PAHO	Pan American Health Organisation
SIDA	Swedish International Development Authority
SPC	State Planning Committee
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
UNU	United Nations University
VHW	village health worker
VLSS	Vietnam Living Standards Survey
WIDER	World Institute for Development Economics Research
WHO	World Health Organisation

EXCHANGE RATES

United States dollar = about 14 000 Vietnamese dong in 1992

United States dollar = about 11 000 Vietnamese dong in 1996

EXECUTIVE SUMMARY

Background and research objectives

In the last twenty years a number of countries have been undergoing a transition from a socialist planned economy to a market economy. These countries are spread across the globe and vary enormously in their levels of development, from the relatively advanced industrialised countries of central Europe, through the former Soviet Union to the mainly rural countries of east and south east Asia. The economic transition in Europe and the former Soviet Union has been associated with political change - *'glasnost'* as well as *'perestroika'* - while political continuity has been more the case in east Asia.

In socialist countries during the period of the planned economy, health services were financed and provided mainly by the public sector. The services were not well resourced and quality and efficiency were often low. But basic services were widespread and accessible to most people at little or no cost. Preventive care was well developed, especially for the control of communicable diseases. Developing socialist countries like China and Cuba had health systems that were internationally commended and came to influence the formulation of the primary health care approach.

Basic education services were similarly widespread and employment levels were high. Although incomes were low, the income distribution was compressed and basic social protection programmes were in place. Absolute poverty and marginalisation were rare.

As a result of all these factors, while the level of economic development was still low, socialist countries made impressive health gains relative to most market economies at corresponding economic levels.

There are two broad categories of transitional experience. In the industrialised economies of Europe and Russia, and the related central Asian countries of the former Soviet Union and Mongolia, transition resulted in economic contraction and crisis. In most of these countries, the living standards of the majority of people fell and large numbers were thrown into poverty. Health status declined dramatically while public health services, needed by the poor, deteriorated. Health care has become more costly to households and is less accessible to the poor as a consequence. By contrast, reform in east Asian transitional economies has brought with it strong economic growth and most people have enjoyed rising incomes. But still a sizeable minority of the population has been left behind in the living standards stakes. The public health systems have been destabilised and the poor find health care less accessible and affordable.

Thus, whatever the advantages are of liberalisation over socialist planning, the health of large sections of the population is not among them. From a situation of

only slowly rising income but guarantees of stable livelihood and access to essential social services, a new poor has arisen in the transitional economies with much less social sector support.

Reform of planned economies needs to come with a health warning.

A comparable situation can be seen in developing market economies where a more impoverished poor face higher public sector user fees under policies of macroeconomic adjustment and health sector reform.

In situations of economic and health sector change, it is necessary to know how poor households are responding to alterations in the public health system and the increased availability of other health care options, and how the poor are generally coping with the higher cost of health care. This was the subject of our research in Vietnam.

Relatively few health care seeking studies have been carried out in transitional economy countries and even fewer have included qualitative methods. None we believe has evaluated the quality of the care to which households have access. In our research we conducted baseline and intervention studies in four rural communes of Vietnam between 1992 and 1998. We studied both the demand and supply sides of health care using complementary quantitative and qualitative methods, and observed change over time. Two research reports have been published. In this third report, we rework some of our baseline findings in the light of the poverty focus of the intervention research and consolidate our policy conclusions.

The main research objectives were:

- to evaluate the quality of primary health care services
- to study household health care decisions and their determinants
- to assess the affordability of health care for poor households on the basis of two criteria: whether cost requires the poor to reduce their utilisation of health care and/or whether health care spending inflicts damage on household economy and welfare
- to appraise the adequacy of fee exemption systems for the poor, propose ways to improve them and facilitate the introduction of exemption reforms
- to improve the accessibility, quality and responsiveness of public primary health care services, especially for poor households

- to study the feasibility of, and facilitate, collaboration between public health services and local private practitioners, in order to increase access of the population, especially the poor, to affordable primary health care of adequate quality and responsiveness.

Main findings

The poor cannot afford health care, even at the local level

The economic reforms in Vietnam have made most people better off, but a significant minority of the population have benefited little, if at all, from reform and they have been left in poverty. Poor households are burdened by debt, often incurred to meet basic consumption needs, and are vulnerable to economic shocks of all kinds, including family illness.

Compared to the non-poor, poor households in our study used less formal health care, especially expensive hospital services, and incurred less health care expense, especially at lean times of the year. This suggests that the poor experienced financial barriers in access to health care.

However, the differentials in health care use and expenditure were much less than that in the ratio of health spending to household income. For households experiencing illness, the poor spent as much as 21.9 per cent of their income on health care compared to 8.2 per cent for the non-poor. Thus, although the poor did restrain their health care seeking relative to the non-poor, they did not do so in proportion to income. The relative inelasticity of health care demand by the poor has been observed widely in developing countries.

The poor stretched their resources to obtain health care and in the process put their household economies under great strain. They had to sustain the opportunity costs of both direct health care expenditures and the loss of labour of sick persons and their carers. To meet health care costs, poor households regularly reduced essential consumption (notably of food, putting future family health at risk), incurred debt and/or disinvested (putting future household livelihood at risk). Health care expenditures that result in lasting adverse effects on households cannot be considered 'affordable', even if households actually incur them. Our findings give powerful support to the contention that the *willingness* of households to pay for health care under the pressure of family illness cannot be taken to mean that they are *able* to pay in terms of household economy, welfare and health. For the poor in Vietnam - and in other low income countries - the economic consequences of illness and health care costs are often a greater problem than access to health care as such.

Fee exemption for the poor: for primary as well as hospital care

Exemption from the payment of some or all fees in the public health system should ensure that the poor have adequate access to essential health services and do not suffer adverse economic or welfare consequences of health care expenditure.

Hospital treatment is expensive, especially an admission which may be financially catastrophic for any household. Because of the high visibility of hospital costs, the government in Vietnam has recognised the need to subsidise hospital treatment for the poor and funds for this purpose are provided by the poverty alleviation programme. However, the design, management and targeting of the hospital subsidisation scheme require radical improvement.

But the need for hospital treatment is relatively rare and in our study the bulk of health spending by poor households was on ambulatory care at the local level. Drugs are the main household cost in ambulatory care and the poor had great difficulty in paying for them. **The regular 'drip-drip' of spending on relatively inexpensive but frequent acts of local health care escapes political attention but is the main problem for poor households.**

In addition, any attempt by households to minimise costs by avoiding or delaying primary care treatment can be detrimental to the health of the patient and may result in the need for hospital care. This is bad for the economy of households and bad for the economy of the health service. It is also bad health service economics to provide subsidised treatment in hospitals, but charge for care at the primary level. This gives poor households the incentive to bypass local services and press for hospital care at subsidised prices.

Exemption of the poor from charges for commune public services is rare in Vietnam. We calculated a benchmark cost of a policy of exempting poor households from paying for essential drug treatment at primary care facilities. The cost of this policy would add about 15 per cent to the public funding of these facilities and could be financed by the poverty alleviation programme, commune general revenue, a commune health tax, and/or the provincial health budget.

The relative importance to households of costs of primary versus hospital care will vary in different circumstances according to the availability, quality and price of health care options. The cumulative predominance of ambulatory over inpatient treatment costs has also been found in poor rural counties of China. Exemption policy should therefore be based on study of the local pattern of household health care seeking and expenditure. Primary level, as well as hospital, costs must be identified and quantified. Exemptions should ensure access of the poor to both essential primary and hospital care. Proposed exemption policies should be costed and potential funding sources identified.

Link exemption to essential drugs policy: good medicine and good economics

In our study polypharmacy was common in public primary care facilities and with all the available health care options, including over the counter drug purchases. This is a worldwide problem. It is sad to reflect that the poor may be placing their household economy under strain to pay for more, and more expensive, drugs than they need in medical terms and which may be subjecting them unnecessarily to adverse effects.

The creation of a subsidy to cover the cost of certain key essential drugs only, to be used in accordance with official therapeutic guidelines, would promote compliance of public health workers with essential drugs policies and should result in better prescribing practices. The subsidy system, combined with a public education programme on the better use of medicines, would also promote a more restricted pattern of drug consumption by households and could help to reduce unnecessary drug expenditure, notably by poor households. The linking of exemption and essential drugs policies has general applicability and should be considered in other settings.

Implementation of exemption policies: often difficult

The implementation of fee exemption systems is often fraught with problems, especially those of identifying the eligible poor and administrative incapacity. In these respects, the transitional economies like Vietnam that have maintained their political and social structures intact may be better placed than other countries to implement effective exemption policies.

What makes households choose one health care option over another?

We found that, in choosing among health care options, households assess the characteristics of providers in relation to household income and severity of illness. The main provider characteristics taken into account are cost, convenience and perceived quality of care.

Cost is obviously a major consideration for households. But often more important for poor households than absolute cost is the preparedness of providers to wait for payment or accept payment in kind. This flexibility in payment terms was much easier to arrange with retail drug outlets and private practitioners than with public sector providers.

In the context of the ready physical availability of health care in Vietnam, the main elements of convenience of providers to households were facility opening hours, the availability of health care out of formal working hours, and the ease of obtaining home visits. For poor households, the working day is consumed by the struggle for survival. They need commune health stations to be open when they should be and for health care to be available in the early morning and in the

evening. Lacking transport, they also need care in their homes if patients find it difficult to travel. Compared with public services, retail drug outlets and private practitioners were much more available, especially out of working hours, and private practitioners were much more ready to make home visits.

Households appear to be good judges of technical quality of care. Public health services were thought to deliver better technical care than private sector providers, but were less caring and communicative in attitude.

Public services were better technically, but private services were more user friendly

Public health services were rated well technically, but the private health sector had advantages in the area of public sector weakness: service responsiveness. This responsiveness is particularly important for the poor, who used private practitioners frequently despite the extra expense. This has been observed quite widely in developing countries. Greater user friendliness of the public sector is necessary if people are going to benefit from what the health service has to offer technically.

We discuss two complementary policy approaches.

Protect the health service legacy of the planned economy, but improve technical quality and user friendliness

The transitional economies have a precious legacy in the health services developed during the period of socialist planning. With economic reform, the public health system is still the provider of ultimate recourse for the poor and is also used by many others. It is the main vehicle for the delivery of preventive services.

In a liberalising climate policy can readily be fixated on privatising reforms, rather than protecting and improving key social institutions that have already been developed and have given service in the past. It is to the credit of Vietnam that, to preserve the rural health service after the decollectivisation of agriculture, the government took commune health workers into state employment. This bucked the privatisation trend and 'nationalised' health cadres who had previously been in the cooperative sector of the economy. This single measure rescued the primary health care system of the country. To appreciate the extent of its importance, comparison should be made with China where no such measure was taken. There, rural reforms resulted in the collapse of the cooperative health financing schemes, a large scale privatisation of village health post staff and a serious deterioration in the rural three tier health network. It is thus necessary to distinguish between reform of economic sectors and reform of social sectors. It would be a historic loss if the health service legacy bequeathed to the transitional economies by the planned past is not maintained and developed under conditions of reform. A comparable conclusion can be drawn for low income market

economies, where health service gains made in the years after decolonisation should also be protected and the public health services rehabilitated from the deteriorated state in which economic crisis and adjustment have left them.

For all the mountain of technical problems that must be solved to reconstruct and rehabilitate public health services, they are in many respects more straightforward to resolve over time than the problems of service responsiveness. This is the Achilles heel of public sector services and it was the area in our intervention research where we signally failed to make progress.

Where public employees have lost real income, a recovery of salary levels is a necessary condition for raising health worker motivation and performance, but it is usually not a sufficient condition for improving service responsiveness. The generation of a user friendly public health service calls for a complex, multidimensional programme of action to promote professional ethics and a culture of service. Ethical behaviour can be promoted through a raft of complementary approaches including basic and post-basic training, the establishment of good practice, participatory management, supportive supervision, performance related rewards, accountability to users and communities - and above all political leadership. On the negative side, disciplinary procedures for unsatisfactory performance need to be made swift and effective.

Unfortunately, in countries in transition from command and control bureaucracies to market forces, there is no great tradition in the public service of responsiveness to client needs and neither is there a strong political awareness of the necessity to promote it. (Of course these countries are not alone in this.) The market appears to be the solution to the problems of the old bureaucracy. Yet this major deficiency of the public health service needs to be recognised and addressed as a priority.

Unlicensed rural practitioners: grant a licence conditional on cooperation with public health system

Since the economic crisis and reforms of the 1980s and 1990s, developing countries have seen a burgeoning of private medical practice, especially of an ambulatory kind. This has occurred even in poor and rural areas of the poorest countries. In addition to the private legal and illegal activities of public health workers, in some countries public sector downsizing and/or voluntary resignations have added a large number of one-time public health employees to the private market. These vary from medical doctors, nurses and midwives, through all grades of formally trained health cadres to village health workers. There are also increasing numbers of informal drug sellers and retail pharmacy outlets, in addition to the reservoir of traditional healers. Many of these private practitioners are not qualified for independent practice and are practising illegally in an unlicensed capacity. Virtually all the private care, especially in rural areas, is unregulated and unmonitored, and much of it is of low quality.

In some countries, public health services are attempting to improve the quality of private sector care, including that of lesser qualified practitioners. In our study communes, unlicensed practitioners were offered official approval for private practice in exchange for working in collaboration with the public health system. Some practitioners preferred to continue to work informally, but others were uncomfortable about their illegal status and opted for official recognition and the professional advantages that would flow from it. These practitioners agreed to have their clinical practice monitored by the public health service, prescribe from a limited list of essential drugs, and assist in public health programmes. Their fees would not be monitored directly, but their charges had to be "affordable by the poor". This system created a framework for regulating the quality and cost of private health care and supported the delivery of integrated curative and preventive primary care services.

It is understood that the commune structure of Vietnam lends itself to this type of close public/private collaboration, but it could well be replicable in other east Asian transitional economies. It might be less easy to apply in other political environments, but even under less socially controlled conditions unlicensed health workers might welcome some deal with local health authorities along the lines of the Vietnam study intervention. The terms and conditions of any public/private contract would be adapted to the circumstances of the particular country and locality concerned.

INTRODUCTION: OVERVIEW OF HEALTH IN ECONOMIC TRANSITION

In the last twenty years a number of countries have been undergoing a transition from a socialist planned economy to a market economy. These countries are spread across the globe and vary enormously in their levels of development, from the relatively advanced industrialised countries of central Europe, through the former Soviet Union to the mainly rural countries of east and south east Asia. The economic transition in Europe and the former Soviet Union has been associated with political change - '*glasnost'* as well as '*perestroika'* - while political continuity has been more the case in east Asia.

Our research has been in one Asian country undergoing transition, namely, low income rural Vietnam. To a large extent, the rural poor of Vietnam have more in common with the rural poor of developing market economies undergoing macroeconomic adjustment than they do with unemployed former state employees of eastern Europe. On the other hand, there are commonalities of the socialist experience, and of economic and health sector reform starting from that experience, that are shared by transitional economies irrespective of their level of development.

In this report, we compare Vietnam mainly with other low income countries, especially - though not exclusively - with low income transitional economies, in particular with China with which it has most in common. However, to put the Vietnamese experience in full context, we begin with an overview of the impact of economic transition on health and health services in the complete range of countries concerned.

Health under socialist planning

In socialist countries during the period of the planned economy, health services were financed and provided mainly by the public sector. The services were generally not well resourced, especially at the primary level, while there was often an over provision of doctors and hospital beds, especially at higher levels. Health worker salaries and motivation were low, health system management was weak and inefficiency was common. Clinical management was often outdated and patient satisfaction was quite low.

But the critical feature was that basic services were widespread and accessible to most people at little or no cost (although informal payment to health workers was commonly practised). Preventive care was relatively well developed, especially for the control of communicable diseases. Socialist developing countries like China and Cuba had health systems that were internationally commended and came to influence the formulation of the primary health care approach (Djukanovic and Mach 1975; WHO/UNICEF 1978).

Basic education services were similarly widespread and employment levels were high. Although incomes were low, the income distribution was generally compressed and basic social protection programmes were in place. Absolute poverty and marginalisation were relatively rare.

As a result of all these factors, while the level of economic development was still low, socialist countries made impressive health gains relative to most market economies at corresponding economic levels, notably by controlling nutritional and infectious diseases in children and other vulnerable groups and by providing maternity services.

By contrast, in the last three decades, health status in the developed planned economies of the Soviet Union and Europe fell back relative to that of the established market economies, notably in relation to chronic diseases of adults, probably as a result mainly of lifestyle factors like tobacco smoking, diet and alcohol consumption (Bobak and Marmot 1996; Leon, Chenet, Shkolnikov, Zakharov, Shapiro, Rakhmanova, Vassin and McKee 1997).

Two broad categories of transition

Despite these generalisations, socialist countries were, and are, not homogeneous and neither has been the transition from a planned to a market economy. Nevertheless, it is possible to distinguish two broad categories of transition.

In the industrialised economies of Europe and Russia, and the related central Asian countries of the former Soviet Union and Mongolia, transition has been accompanied by political change and in most countries by major economic contraction and crisis. By contrast, reform in east Asian transitional economies has mostly taken place in the context of political continuity (except in Cambodia) and has brought with it strong economic growth. We will now summarise the economic and health experiences of the main groups of transitional economy countries.

Former Soviet Union and countries of eastern and central Europe

Soviet Union and Russian Federation

During the last quarter of a century of the Soviet Union, the economy expanded at decelerating rates until it contracted after 1989 (Davis 1999). Over this period, despite corruption and inefficiency, real incomes increased (though at a declining rate), income inequalities diminished, social benefits increased, the number of the poor declined, food consumption rose, the housing stock grew and more people received higher education. On the down side, cigarette smoking and alcohol consumption rose (to the mid 1980s), as did environmental pollution.

Real health expenditure nearly quadrupled during this quarter of a century, but the result was more growth in outputs than improvement in quality (Davis 1999). In the

health service, productivity remained low and shortages continued, especially in the 1980s when service performance deteriorated. Overall life expectancy at birth fell by nearly three years during the 1970s with only partial recovery in the 1980s, due mainly to an increase in chronic disorders, especially circulatory diseases in men. A sharp increase in life expectancy occurred in the mid 1980s coinciding with the anti-alcohol campaign of the Gorbachev period (Leon *et al*. 1997).

The Soviet Union broke up in 1991. In the Russian Federation, gross domestic product fell dramatically in real terms and by 1997 was less than 60 per cent of that in 1989 (UNICEF 1998); the economy deteriorated further after 1997 following the Asian financial crisis. While a small minority amassed wealth, not infrequently related to institutionalised corruption and organised crime, the majority of the population suffered falling real incomes. State enterprise reform and recession caused rising unemployment. Homelessness and extreme poverty increased, as welfare provision deteriorated (Davis 1999). Consumption of meat, fish, milk and cabbage fell, while that of alcohol rose. Drug misuse rose dramatically (Ciment 1999).

Health sector reforms have been introduced or proposed, some of them similar to those piloted during the Soviet period (Davis 1999). The reforms included decentralisation, marketisation within the public health service, privatisation of medical care and the shift from budget finance to compulsory health insurance. Implementation has often been patchy and slow, however, in the face of economic, political and administrative constraints. On the other hand, privatisation of retail pharmacies and of the pharmaceutical and medical equipment industries has been realised. With fiscal contraction, real public health expenditure (including that from national health insurance) fluctuated but generally declined in the 1990s. Health service shortages increased and performance deteriorated, especially at the lower levels. User fees are being progressively introduced in public health services and households are bearing an increasing proportion of the cost of their care, especially for drugs. Expenditure on medicines may comprise a high proportion of household income and many households do not buy drugs because of their cost. In multivariate analysis, exemption from prescription charges is associated with a greater consumption of prescribed drug items, suggesting that cost is limiting the utilisation of prescribed medicines among non-exempt patients (Street, Jones and Furuta 1999). Poorer people now have more limited access to effective health care.

Overall life expectancy at birth decreased from 69.2 years in 1990 to 64.0 years in 1994 and in males from 63.8 years to 57.6 years (recovering slightly thereafter). This dramatic deterioration in health was due mainly to rising death rates from circulatory diseases, accidents and violence, and specific alcohol related diseases, especially in men, the overall trend arguably resulting largely from an increase in alcohol consumption (UNICEF 1995; Leon *et al*. 1997). The incidences of tuberculosis, sexually transmitted diseases, HIV infection (especially among

injecting drug users) and other infections also rose, as did the prevalence of anaemia in pregnancy (UNICEF 1998).

Former Soviet republics of central Asia

The republics of central Asia were the poorest parts of the Soviet Union and the population is about two thirds rural. During the 1980s the countries showed economic growth and improvement in life expectancy (Glewwe and Litvack 1998; McKee, Figueras and Chenet 1998). With the dissolution of the Soviet economic block, markets for their raw material products imploded and the collapse of trade brought about major economic and fiscal contraction, in most cases as bad or worse than that in Russia (UNICEF 1998). Social safety nets weakened, living standards fell and poverty worsened (Chen, Rohde and Jolly 1992).

Public health expenditure fell substantially in most countries and the health services suffered acute shortages, especially at lower levels. Health sector reforms, similar to those in Russia, have been introduced or proposed, including mixes of decentralisation, hospital rationalisation, marketisation, privatisation (notably of pharmacies), and the introduction of social health insurance. However, many of the reforms appear to lack feasibility in the local contexts and progress has been slow (McKee, Figueras and Chenet 1998). User fees have been introduced in public health services and in at least some countries households now make considerable contributions to the cost of their care (through both formal and informal payments), notably for drugs (Guseynova, Chakoury and Eerens 1996; Ensor and Savelyeva 1998). Poorer households have difficulty in meeting these costs, especially for inpatient care, and many patients refuse hospital admission for this reason. The combination of economic and health sector events has threatened access of the poor to effective health care and resulted in a decline in life expectancy, mainly due to increased adult mortality from chronic diseases as in Russia.

Eastern and central European countries

Economic and fiscal contraction affected the countries of eastern and central Europe after 1989, in some cases more severely, in others less severely, than in Russia (UNICEF 1998). As in Russia, unemployment rose, real incomes fell, income inequalities increased, safety nets weakened and the numbers in poverty rose. The recession was prolonged in the more severely affected countries, whereas the stronger economies of central Europe (like Poland and the Czech Republic) made a more rapid recovery.

Health sector reforms have included a shift from budget finance to social health insurance, the introduction of user fees (mostly for drugs) in public health services, and the privatisation of pharmacies and the pharmaceutical distribution chain (van Andel 1997). By 1997 out of pocket payments (to meet user fees or make private sector purchases) contributed 2-30 per cent of total health care finance, but 5-60

per cent of the cost of drugs. Exemptions from the payment of fees are often inadequate and the poor - especially the elderly poor - can have difficulty in meeting drug costs. Some of the stronger economies with successful social health insurance schemes (notably Hungry, the Czech Republic, Slovakia and Croatia) saw an increase in health spending, whereas the poorer countries suffering severe economic declines experienced a more or less proportional fall in health expenditure.

Some of the countries (notably Ukraine and Bulgaria) sustained marked falls in life expectancy, while others with less of a recession (like the Czech Republic, Slovakia and Slovenia) gained in life expectancy (Adeyi, Chellaraj, Goldstein, Preker and Ringold 1997). Mortality from cardiovascular diseases actually decreased in Poland, the Czech Republic and Hungry (McKee and Zatoñski 1998). But where life expectancy fell it was, as in Russia, mainly due to increases in adult male mortality (UNICEF 1995) associated with lifestyle related chronic diseases, while female life expectancy stagnated.

East Asian transitional economies

By contrast with the countries of Europe and the former Soviet Union, reform in the east Asian transitional economies has been accompanied by economic growth, especially strong in China and Vietnam, but also in Laos and Cambodia (Glewwe and Litvack 1998). The transition began about 1980 in China, 1986 in Vietnam and Laos, and 1989 in Cambodia.

In these countries, most of the people are engaged in agriculture or small scale private activities and they benefited directly from the higher prices brought by reform. Their populations have been much less affected by the state enterprise reforms that resulted in the loss of regular employment of many workers in the industrialised transitional economies. As a result average real incomes in the east Asian countries have risen with reform.

On the other hand, some sections of the population have gained much more than others and the transition has left many households behind, especially in poorer regions. Income inequality increased notably after a few years of the reform process. For poor households, the market economy has brought relatively little benefit and sometimes none at all. They are often burdened by debt, are vulnerable to economic shocks of all kinds, and in the market economy are insufficiently helped by safety nets. Many find the new health costs they face unaffordable.

The health sector in these countries has been liberalised. Although there were temporary falls in real public health spending at different stages of the reform process, the general trend with economic growth has been increased public expenditure on health. However, with privatisation and the introduction or increase in user fees, household health expenditure skyrocketed, especially for the

purchase of drugs, and government spending decreased as a proportion of total health expenditure. Despite the large increase in household spending in the private sector, monitoring and regulation of private health care providers is rudimentary or non-existent.

Because of their closeness to the experience of Vietnam, we now outline more details of the consequences of reform for the health system in China (Tang, Bloom, Feng, Lucas, Gu and Segall 1994) and Laos (Holland, Phimphachanh, Conn and Segall 1995). It is difficult to draw useful comparisons with Cambodia because of that country's recent changing political and military history and the scarcity of reliable health sector data. Vietnam we describe later.

Health sector in China under reform

In China, the economy was expanding before economic reform, even during the cultural revolution, and it expanded even faster with reform. Health sector expenditure grew even more rapidly than the economy as a whole. However, fiscal decentralisation and the introduction of the 'financial responsibility system' weakened the influence of the Ministry of Public Health on health resource allocation. Government health expenditure focused more on hospitals, especially at the higher levels in urban areas, while the funding of lower level, rural and preventive services was constrained.

Under 'financial responsibility', health facilities are required to generate revenue, which is used in part to pay health worker bonuses. This has resulted in an emphasis on curative medicine of an interventionist style, involving polypharmacy and the overuse of sophisticated technology, to the detriment of preventive activities. With price reform, service fees and drug costs increased in real terms. Although private retail drug outlets exist they are mainly in urban areas and most people buy drugs from public health facilities, which generate most of their revenue from drug sales. Thus in China, much of the marketisation of the health sector has taken place within public facilities.

At the lower end of the health system, the decollectivisation of agriculture and the disbanding of the communes destabilised the rural three tier network. The cooperative health care financing schemes - the backbone of rural health finance built up during the cultural revolution - collapsed in most parts of China. For two thirds of the Chinese population, most of them rural, the financial burden of health care was shifted once again to individual households, who have to pay on a fee for service basis. Poorly resourced lower level facilities and services deteriorated, especially in poorer counties, and they attracted a declining number of patients. Many of the one time barefoot doctors are now private practitioners and rural doctors generally focus their work on income generating curative care, especially by selling drugs. This, together with a decline in the network supervisory system, has resulted in a deterioration of preventive services.

The government is now trying to resurrect the cooperative financing schemes and rehabilitate the rural health network, especially in poor areas. In the meantime, especially in poorer regions and for poor families, cost can constitute a serious barrier to obtaining health care, particularly inpatient treatment. Medical costs are also a serious financial burden on rural households and make an important contribution to poverty in rural China.

Health sector in Laos under reform

In Laos, a period of macroeconomic imbalances and economic stagnation in the mid 1980s was followed by the introduction of economic and institutional reforms. Initially real public health expenditure decreased dramatically. The health service suffered shortages of all kinds, the salaries and motivation of health workers plummeted, and patient attendance at public health facilities fell, sometimes to the point of dictating closure. In the same period, private retail drug outlets - and to a lesser extent private medical clinics - were opened in increasing numbers throughout the country.

Although public health spending recovered in the early 1990s, households were by then financing about a half of total health expenditure. Given the poor state of the public health service, most of this household spending was in the private sector for the purchase of drugs. User charges were introduced to the public health service but, even for patients able to attend the central hospital in Vientiane, about a quarter were unable to pay the fees.

Economic transition: need for a health warning

It is clear from this brief overview that, whatever the advantages are of liberalisation over socialist planning, the health of large sections of the population is not among them. From a situation of only slowly rising income but guarantees of stable livelihood and access to essential social services, a new poor has arisen in the transitional economies.

In much of the former Soviet Union and transitional Europe, economic crisis lowered the living standards of the majority of the people and threw large numbers into poverty. Health status declined dramatically while public health services, needed by the poor, deteriorated. Health care has become more costly to households and is less accessible to the poor as a consequence.

In east Asian transitional economies where growth has occurred, a sizeable minority of the population has been left behind in the living standards stakes. The public health systems have been destabilised and the poor find health care less accessible and affordable.

Reform of planned economies needs to come with a health warning.

The low income transitional economies are mostly starting from a basis of a relatively well developed and distributed health service, which is more than can be said of most poor market economy countries. Nevertheless, there are similarities between the problems of the poor in affording health care under liberalising transitional reforms and of the poor in developing market economies facing higher user fees under policies of health sector reform and macroeconomic adjustment. Our research can thus be located in this broader context (Gilson 1988; Creese 1990; McPake 1993; Russell 1996).

What we add

It is obvious that many actions have to be taken across a broad front to address the range of health and health service problems that arise in a transitional economy context. One starting point for such actions must be to know how households - and especially the poor - are responding to changes in the public health system and the availability of other health care options, and how the poor are coping with the higher cost of health care. This was the subject of our research in Vietnam.

Relatively few health care seeking studies have been carried out in transitional economy countries (with the exception of China and more recently Vietnam) and even fewer have included qualitative methods. These methods allow insight into the life situation of households, the affordability to them of health care, their decision making processes and the reasons behind the health care choices they make. None of the studies to our knowledge has evaluated the quality of the care to which households have access. Elsewhere we have reviewed the literature on health care seeking behaviour in Asian transitional economies (Tipping 2000).

In our research we conducted baseline and intervention studies in rural communes of Vietnam between 1992 and 1998. The research was relatively small scale, to allow us to make an indepth study of both the demand and supply sides of health care using complementary quantitative and qualitative methods, as well as observe change over time. Two research reports have been published (Tipping, Truong, Nguyen and Segall 1994; Segall, Tipping, Dao and Dao 1999). In this third report we consolidate our research analysis and policy conclusions.

Structure of report

In the next section, we present the background to our research in Vietnam, tracing the main economic and health sectoral events that took place in that country from the planned economy period through the early transitional years to the end of the 1990s. We then give details of our study, the methods we used, and the characteristics of our study communes and their health services.

In the first of two substantive sections, we present our findings on health care seeking by study households, both as a whole and disaggregated by income

group. Findings are presented on the following: illness reporting, health care actions, rates of use of different health care providers, and health care expenditure. We analyse household health spending as a proportion of household income and demonstrate the difference between the willingness and ability of the poor to pay for health care. The implications for fee exemption policy are discussed. This section documents the health care seeking behaviour of households and the influence on it of income, duration of illness and cost of health care option.

The second substantive section deals further with the determinants of household choice of ambulatory health care option, including the type of illness and characteristics of providers as seen by households. We discuss the implications of these findings for improving the quality of public primary health care and describe a novel form of public/private health care mix that was introduced to our study communes during the intervention research phase. Finally we look at some wider implications of our research for developing transitional and market economy countries.

The relations of certain individual characteristics, namely, the educational level of the household head, and the age and sex of the ill person, to ambulatory health care seeking and expenditure are analysed in annex 1. Alternatives to income, namely, rice sufficiency and frequency of meat consumption, as indicators for identifying households vulnerable to the effects of health care costs are discussed in annex 2.

ECONOMIC AND SECTORAL CONTEXT OF OUR RESEARCH IN VIETNAM

Planned economy period and structure of health system

Vietnam has a well developed public health system with extensive rural coverage. The problems with the system have been more with function than structure.

In the planned economy period, industry and trade were controlled by the state and agricultural production was collectivised through cooperatives. The social sectors were developed as part of the planned economy. The public health system was built up in the north of the country after partition in 1954, during the period of the Democratic Republic of Vietnam (Segall 1969). The public system was much weaker in the south and had to be developed in that part of the country after reunification in 1975. The present day structure of the health system was established during the planned economy period.

At the central level are the Ministry of Health, specialised institutes responsible for national health programmes, and central hospitals. Centrally run institutions and programmes consume about a third of total public health expenditure. Most health services are the political responsibility of provincial governments - the provincial people's committees - and are run technically by their respective provincial health

bureaux. Health services at the provincial level consist mainly of general and specialised hospitals and preventive medicine centres. The next, and lowest, tier of the state health system is the district health centre, which consists of the district hospital, intercommunal polyclinics (outlying outpatient branches of the hospital), the district pharmacy, and preventive health teams. The district health centre is under the political authority of the district people's committee, but is managed technically by the provincial health bureau and, in at least some provinces, the district health services now receive their recurrent budget directly from the provincial bureau.

As part of the command economy every district had to have its own hospital and district bed numbers were planned according to service norms, rather than on criteria of local need and efficiency. Large numbers of small district hospitals were built, which have suffered from diseconomies of scale. Bed occupancy rates are often low and lengths of stay excessive.

Although not part of the formal state system, the basic administrative unit in Vietnam is the commune, run by the commune people's committee (CPC). About 90 per cent of communes have a commune health station (CHS), which is under the administrative control of the CPC, but is supervised technically by the district health centre. The CHSs are mostly staffed by a mix of three year trained, secondary medical cadres, namely, assistant doctors, assistant pharmacists and nurse midwives (university level doctors are now increasingly deployed to CHSs). The health stations are the units responsible for the delivery of primary preventive and curative care.

Rural communes are divided into villages. During the period of cooperative production, commune health services were the financial responsibility of the CPCs and cooperatives. Many communes had a network of part time village health workers (VHWs), who were mostly elementary nurses trained for less than a year. The VHWs were supervised technically by the CHS and remunerated by the cooperatives. Commune public health services were better developed in the north of the country owing to the weakness of the agricultural cooperative movement in the south.

Before the economic reforms, public health care was provided virtually free of charge. Patients paid only for drugs at a highly subsidised price. (At the time Vietnam was provided with subsidised pharmaceutical products by the Soviet Union and east European countries.) Private medical practice and sale of drugs were officially prohibited, although health workers often practised informally from home and drugs were sold privately on the black market (Pham 1996).

During the planned economy period, resource levels in the health service were low, as was productivity, but access to essential curative and preventive health care was good in most places. Basic education was also widespread, and literacy

and employment levels were high. Average incomes were low, but the income distribution was compressed.

As a consequence of all these factors, Vietnam made impressive gains in public health. Infant mortality plummeted from over 150 deaths per 1000 live births in the 1960s to around 50 at the beginning of the 1980s and to around 40 during the 1990s; like in China, infant mortality has been lower and life expectancy higher than in most market economies at similar levels of economic development (Glewwe and Litvak 1998; Deolalikar 1999).

Economic stagnation, economic reform and effects on health system

The period after reunification was a time of economic difficulty for Vietnam (World Bank 1992a; Tran 1996). The country had suffered serious war damage and had to sustain the costs of reunification. In 1979 Vietnam fought two wars and from that year was subjected to an international economic embargo, which was to last until 1993. Many difficulties arose also, however, from problems in the command and control economy. The net results were low productivity and economic growth. The balance of payments was in deficit and the country had to import food. Domestic saving was very low and investment was financed mainly by aid from the Soviet Union. By the mid 1980s, incomes per person had virtually stagnated, the budget deficit was rising and there was hyperinflation.

The reform process of *doi moi* was launched in 1986 with a view to transforming the country from a planned to a market economy. However, the first years of reform were difficult in many respects. The liberalisation programme resulted in the break up of many state enterprises and a decline in enterprise transfers, which had been the main source of revenue for the government. Although economic activity increased, the narrow tax base and inefficiency in tax collection limited government revenue. Government spending decreased and during the second half of the 1980s the budget deficit as a proportion of total public spending almost doubled. At the turn of the decade Vietnam suffered the loss of Soviet aid, as well as export markets and concessionary trading with the former Soviet economic bloc. This included the loss of subsidised pharmaceutical products.

The meagre resources of the Vietnamese health system were spread even more thinly after reunification. But the negative consequences of this initial phase of economic transition had further serious resource repercussions on the service. Total government health expenditure (including that financed by aid) per person decreased in real terms (Carrin, Ron and Muray 1993). With the high rates of inflation, health worker salaries fell in real terms. Health facilities deteriorated and there were shortages of drugs, medical equipment and materials of all kinds. The quality of public health care thus deteriorated and utilisation rates fell, especially at the lower levels of the service. The main saving grace at this time was multilateral health aid which increased from the mid 1980s and focused mainly on national

health programmes, although this assistance had a verticalising effect on the health system.

The market reforms of the second half of the 1980s, including the replacement of cooperative agriculture with family based production and the liberalisation of agricultural prices, resulted in increases in food production and rural incomes. However, the down side was that CPCs and cooperatives lost funds from which to finance social services collectively. In many communes the network of VHWs collapsed. The CHSs declined into a state of disrepair and their equipment stock, such as it was, deteriorated. The real income of CHS workers fell, their salaries were paid irregularly and their morale plummeted. Many of them devoted less and less time to public health work as they took on sideline occupations to survive.

From 1989 further economic reforms (including the effective floating of the dong, real interest rate rise, decontrol of prices and enhanced trade liberalisation) were introduced to bear down on inflation and reduce the balance of payments deficit. Annual inflation fell from 67 per cent in 1990 and 1991 to under 18 per cent in 1992 (Tran 1996: 238-9) and remained under control (Vietnam Investment Review 1996). Exports and food production increased and domestic food prices fell. Vietnam, having had to import rice for many years, became the world's third largest exporter of rice in 1989. In the same year the salaries of civil servants (including health workers) were restructured and increased substantially. The economy as a whole grew strongly from 1989, with industry expanding rapidly from 1992. Gross domestic product increased annually by over 8 per cent in real terms between 1992 and 1997 (Tran 1996: 222; Economic Intelligence Unit 1998) With initial tax reforms, government revenue rose rapidly from 1992 and government expenditures were restored. In the early 1990s, gross domestic product per person was calculated to be about $200, but in terms of purchasing power parity was estimated at about $1000 (UNDP 1992); by the mid 1990s the latter was thought to have reached over $1200 (Deolalikar 1999). Not surprisingly, economic growth fell off with the advent of the Asian financial crisis (Siebert 1999).

Real incomes of most households increased and the prevalence of poverty declined (Tran 1996: 234-5). But the benefits of economic reform have been distributed unequally and there is a growing divide between the rich and the poor. The Vietnam Living Standards Surveys (VLSSs) of 1992-93 and 1998 show that average weight and height of individuals, controlled for age and sex, increased in all consumption expenditure groups, but the gains were absolutely and proportionately greater among the rich than the poor (Deolalikar 1999).

Health sector reforms

In 1989 the Ministry of Health introduced major reforms to the health sector. Service and drug fees were applied in the public health service. Facilities sold drugs to the public at market prices with a mark up of up to 15 per cent. Fees could be retained by collecting facilities and used to improve the service delivered,

including by awarding allowances to health workers. Preventive services and treatment administered under national health programmes were to continue to be free of charge. The referral system was liberalised so that patients could attend any facility of their choice. In the following years, as part of a public sector reform programme, efforts were made to rationalise hospitals and downsize government and CHS staffing levels through early retirement. Efforts were also made to reduce the intake of health training institutions.

Private medical practice and the retail sale of drugs were sanctioned for university level medical and pharmacy personnel, as well as traditional medical practitioners. Initially in the form of ministry regulations, these reforms were confirmed in law in 1991 and 1993 and the policy of a public/private mix of health care provision and financing was adopted officially by the Communist Party in 1993 (Pham 1996). Private medical and pharmacy practice became widespread throughout the country, mainly in the form of small clinics and retail drug outlets. Some of the private practitioners are the doctors and pharmacists for whom the laws were intended, i.e. university level professionals who have retired from public service or who, though still in public employment, practise 'out of hours'. Even these practitioners should be licensed by the local provincial health bureau. However, many other private practitioners - especially in rural communes - are lesser qualified health workers who practise illegally in an unlicensed capacity.

Drug prices increased from their subsidised levels in the mid 1980s to reach market prices towards the end of the decade. By 1992-93 drug costs accounted for over 90 per cent of household health care spending by all income groups (SPC and GSO 1994: table 3.9.5). With the growing availability of medicines, especially from the import of Chinese products, drug prices fell relative to general retail prices in the 1990s (Segall *et al*. 1999).

Thus with reform, households could choose between the public health service on the one hand, and the purchase of drugs over the counter (OTC) and private health care consultations on the other. Within the public sector they could choose between consultations at CHSs and - if they could afford it - self referral for much more expensive hospital treatment. This increase in choice was bought, however, at the cost of skyrocketing household health care expenses, which were a new burden on households, especially heavy for the poor. Nevertheless at the commune level where costs were lower (and given the poor circumstances of CHSs), many households took up the alternative options and curative CHS consultations dwindled to only a few patients a day. On the other hand, preventive health programmes continued to be delivered through CHSs and indeed improved with donor support.

Since the 1970s the government had provided free drugs and funded CHS worker salaries in mountainous areas inhabited by ethnic minorities. In 1987, given the deteriorating situation of commune health services across the country, the government decided that nationally a defined number of CHS staff per commune

should be paid salaries as state cadres, including allowances and pension. The number (typically three) would depend on the size of the commune population and CPCs could employ additional contract health workers if they wished. In principle the staff salaries were still to be paid by the CPCs but, where they could not, the salaries were to be topped up by the district or provincial people's committees. Implementation of this system of shared financial responsibility was slow and patchy and by the early 1990s only a third of CHSs were subsidised in this way (World Bank 1995: para 4.53). Then in 1993 with the economic upturn, the government officially took on CHS staff as state health employees.

It should be noted that this very important measure bucked the privatisation trend of economic reform and in fact 'nationalised' a certain number of CHS workers who had been previously in the cooperative sector of the economy. It had the effect of greatly improving the income and morale of CHS workers and it has stabilised the public primary health care system in Vietnam. It is interesting that no such measure was taken in the health sector reforms of China, where privatisation of village health post staff has progressed to a considerable degree (Tang *et al*. 1994).

The net result of all these changes is that CHSs are now financed mainly from two sources: households through the purchase of drugs and services, and the state budget for CHS worker salaries, health programmes and some capital investments. Financing from CPCs - in some places partly through a dedicated commune tax ('voluntary contributions') - has fallen to low levels. This means that many CPCs now regard the running of commune health services to be largely a district health responsibility.

In 1993 the government introduced compulsory health insurance for state employees and workers in state or private enterprises with more than 10 employees (Ensor 1995). In principle the insurance covers the beneficiary for the cost of inpatient and outpatient treatment (for most, though not all, conditions) in a specified state health facility. In practice insured patients usually still face some charges. When fully implemented, the scheme will cover only around 10 per cent of the population. Voluntary membership is allowed and encouraged, but the uptake has so far been low.

Recent health sector trends

Between 1991 and 1997 public health expenditure increased: as a proportion of total government expenditure from just under 7 per cent to nearly 8 per cent; as a proportion of gross domestic product from about 1.0 per cent to 1.8 per cent; and in real terms per person more than 2½ times to reach about 58 000 dong ($5.3) per person in 1997 (Deolalikar 1999).

In the later years of the 1990s, expenditure by the public health service was financed about 60 per cent from the state budget and the rest roughly equally

between health insurance, direct user fees and international aid (Truong 1999). Hospital admissions fell from a national annual average of 105 per 1000 people in 1987 to just under 70 per 1000 people in 1996 and 1997 (Deolalikar 1999). However, with the increase in health service spending has come a partial recovery of outpatient utilisation: according to facility based data, the national average contact rate per person per year at public facilities fell from 2.1 in 1987 to 0.9 in 1993 and then increased to 1.6 in 1996 and 1997.

There are inequities in the distribution of public health resources (Deolalikar 1999). For one thing, richer provinces spend more per person on public health care than poorer provinces. Then about a half of public health expenditure is allocated to hospitals which, for reasons of physical access and affordability, are used much more by the (urban) rich than the poor. This capturing of hospital subsidies by the rich has increased since the advent of health insurance; in 1998 45 per cent of public hospital users nationally were drawn from the richest 20 per cent of the population and only 6 per cent from the poorest 20 per cent. In addition, the rich have proportionately more access to higher level hospitals which have larger subsidies.

In the 1990s for the country as a whole, self-treatment was the health care option most often reported by people with illness, especially by poorer sections of the population, and the reliance on self-treatment appears to have increased for most income groups during the course of the decade (Deolalikar 1999). Towards the end of the decade, the rich consulted the private medical sector about twice as often as public providers (mostly in the form of hospitals), while the poor used the private sector about as often as public providers (mostly in the form of CHSs). Private health spending was nearly five times health budget allocations and households financed about 80 per cent of total health expenditure. The burden of health costs on households may have declined during the 1990s with the fall in the relative price of drugs.

In the mid 1990s nearly 60 per cent of private health spending (most of it on drugs) took place in the private sector (World Bank 1995: annex 4.3, table 12). Yet the private sector - be it in the form of retail drug sales or formal health care - is virtually unregulated and unmonitored for quality.

Thus in the last several years Vietnam has undergone a period of rapid economic reform and growth. The reforms have had important repercussions on both the health sector and on the decision making of households for health care. Self-medication has greatly increased with the burgeoning of retail drug outlets and there is more choice in the market of health care providers. But there are also greater costs, especially at higher levels of care. While the wealthy can often shop around for the service provider that suits them best, the poor fear and avoid the cost of health services and seek cheaper options. Access to - and affordability of - health care for the poor have become important political issues in Vietnam.

STUDY, SITE AND OBJECTIVES

Our research took place in four lowland rural communes of two districts in Quang Ninh, a lower middle income province in the north east of Vietnam. The research was conducted in collaboration with the Hanoi Centre for Social Sciences in Health (now the Health Strategy and Policy Institute) and was supported by grants from the European Commission. Exploratory baseline studies were conducted in 1992 and early 1993 on the quality of public health services and household health care seeking in the communes. The purpose was to obtain a view of commune health care from both the supply and demand sides in the context of economic reform. Intervention studies were pursued in the communes between 1995 and 1998, with a view to increasing access of poor households to primary health care services of adequate quality and responsiveness. During the intervention phase some of the baseline observations were followed up.

Specific objectives of the baseline research were:

- to develop methods for evaluating the quantity and quality of primary level health services in the context of Vietnam but with applicability to other countries

- to develop methods for studying household health care decisions and their determinants in the context of Vietnam but with applicability to other countries

- to apply the methods in selected rural communes in Vietnam, with a view to informing policy on how to improve the accessibility, quality and responsiveness of local health services

- to lay the basis for a second stage of intervention research in the study communes

- to strengthen the capacity for interdisciplinary health systems research in Vietnam.

Specific objectives of the intervention research were:

- to assess the affordability of health care for poor rural households on the basis of two criteria: whether cost requires the poor to reduce their utilisation of health care and/or whether health care spending inflicts damage on household economy and welfare

- to appraise the adequacy of fee exemption systems for the poor, propose ways to improve them and facilitate the introduction of exemption reforms

- to improve the accessibility, quality and responsiveness of commune public health services, especially for poor households

- to study the feasibility of, and facilitate, collaboration between public health services and private practitioners at the commune level, in order to increase access of the population, especially the poor, to affordable primary health care of adequate quality and responsiveness.

The primary findings of these two phases of research have been published (Tipping *et al*. 1994; Segall *et al*. 1999). In this report we rework some of our baseline findings in the light of the poverty focus of the intervention research and consolidate our policy conclusions. We focus on two main themes in the context of economic transition in Vietnam: the affordability of health care for poor households; and the determinants of household choice of health care option, with special reference to poor households.

METHODS

We employed complementary quantitative and qualitative methods. Our overall research strategy is summarised in table 1.

Table 1. Outline of research strategy

Subject to be investigated	Main methods employed
Technical health care quantity and quality	Technical evaluation
Household health care acts and costs	Longitudinal household illness survey + qualitative interviews and focus groups
Potential determinants of health care acts:	
• type and severity of illness	Longitudinal household illness survey
• patient characteristics	Longitudinal household illness survey
• household characteristics	Cross sectional household survey
• perceived provider characteristics	Qualitative
Affordability of health care	Analysis of above + qualitative
Interventions	Participant observation + qualitative

Wherever possible, findings from the different methods were cross checked by triangulation. More methodological details can be found in our primary research reports (Tipping *et al*. 1994; Segall *et al*. 1999) and the study instruments have been published (Truong, Nguyen, Tipping and Segall 1994).

Field studies

The selection of communes was purposive with a view to including a range of economic circumstances and CHS quality. Background information on commune structures, decision making processes and socioeconomic characteristics was obtained from the chairman or vice-chairman of the CPC.

Commune health data were obtained in the following ways: interviews with the assistant doctor in charge of the CHS and other commune health workers; study of CHS statistics, records and consultation books; inspection of CHS facilities; observation of CHS 'health day' activities and antenatal and family planning sessions; and a survey of all households in the study villages with children under five years, to check child immunisation status and household water and sanitation facilities.

In each commune baseline household surveys were conducted in two villages, one near to and one far from the CHS.

There were no clear poverty lines at the time of our baseline research. To ensure adequate representation of poor families in the study, therefore, households were first stratified for wealth by local participatory exercises. Groups in each village defined local criteria for household wealth and then, using the list of village residents, classified households into poor and non-poor strata. Study households were selected from each stratum by systematic random sampling using the full

length of the household list. The study was exploratory and sample size was determined by resource constraints rather than anticipated statistical differences. Around 40 households were selected from each stratum, making a sample of about 80 households per village.

A cross sectional survey was carried out to determine the demographic and socioeconomic characteristics of selected households. The survey questionnaire was first pilot tested and revised. The survey was conducted by local school teachers during June and July 1992, a post-harvest dry period. Respondents were the wife of the household head or the household head if she was a woman.

A longitudinal survey of the same households was then made to record the occurrence of acute illness episodes and resulting health care seeking behaviour. Accidents or acute exacerbations of chronic conditions were considered as acute episodes. The household illness record was also first pilot tested and revised. The survey was carried out over a 16½ week period between August and December 1992: August and September were rainy months of relative plenty, while October to December were dry months of relative shortage. The households notified the local teacher when a member fell ill and the teacher helped the family to fill out the illness record. Data on the patient, the type and severity of the illness, health care responses, health care expenditures, and the outcome of the episode, were recorded.

The longitudinal illness record was an exceptionally effective instrument for collecting information on illness and health care seeking (Tipping and Segall 1996). Unlike the more usual 2-4 week recall method, the longitudinal method recorded events at the time or shortly after they occurred. It generated detailed data of great internal consistency. It also permitted the measurement of illness incidence (as distinct from prevalence), which is more appropriate for poor communities like our study communes where the disease burden is mainly of an acute kind.

A preliminary analysis of survey findings was used to select households for further study by qualitative means. The aim was to look more deeply into the social and economic circumstances of households, the consequences of household illness and health care expenses, and the determinants of health care decisions. We did not probe deeply into intra-household decision making processes. In most cases, women are the main health carers in the family, but the household head (most often a man) is consulted over most decisions, especially where these involve expenditure (Tipping *et al*. 1994). We report simply on households as the unit of decision making.

Guidelines were developed for qualitative interviews and focus group discussions. About 12 indepth semi-structured interviews were conducted with women in each study village, making a total of around 100 interviews. Focus group discussions

were held in each commune, with groups consisting respectively of older or younger women from poor or non-poor households.

We also carried out qualitative studies during the intervention phase. In 1997 we interviewed 72 heads of randomly selected households in the study villages and followed these up with focus group discussions. The intervention phase had a sharper focus on the poor and the households were drawn from each of three household income groups categorised by CPCs as hungry (i.e. food short), poor and non-poor. The CPC categorisation was based on guidelines provided by the Ministry of Labour, Invalids and Social Affairs.

Our general approach in the intervention studies was that of participant observation, with participation consisting of the promotion and facilitation of interventions through interviews and group discussions, and observation of what did and did not work, and why.

Analysis

In 1993 the *Survey of Wealth and Poverty in Viet Nam* (General Statistical Office 1994) defined the rural poor as households with monthly incomes of less than 50 000 dong per person and the very poor (likely to be short of food) as households with monthly incomes of less than 30 000 dong per person. Although different poverty lines have been proposed, these were the ones that were adopted by the *National Programme for Hunger Eradication and Poverty Reduction in Viet Nam* (Ministry of Planning and Investment 1996). The income thresholds were based on a price of rice of 2000 dong per kilogram, which was identical to rice price in our study communes at the time of the baseline research in 1992-93 (Segall *et al*. 1999: table 4). Thus, although there were no clear poverty lines at the time of the baseline studies, for our secondary quantitative analysis we have used the income threshold of less than 50 000 dong per person as our poverty line. For the sample to be representative of the village populations without stratification, the data were weighted to adjust them to the actual household composition of the villages by locally defined wealth group.

In our 1997 qualitative studies we found few differences between the situation of the CPC household categories of hungry and poor (Segall *et al*. 1999) and in our analysis we have amalgamated these two groups into a single category of 'poor'. By doing this, the combined category corresponds broadly to the 'poor' household category defined on the above poverty line criterion (Ministry of Planning and Investment 1996; World Bank 1999: 67).

We report findings from the qualitative studies of both the baseline and intervention research phases. There were no clear differences across communes in the situation of households in given income categories and we have combined the qualitative data from our four study communes. The responses and opinions

expressed in the individual interviews and focus group discussions were recorded, coded and analysed for content.

Survey and illness record data were cleaned and analysed using the statistical programme SPSS for Windows version 9.0. Statistical significance is expressed at the 5 per cent and 1 per cent levels. In addition to cross tabulations of average rates by household group, we carried out multivariate analyses of individual illness episodes. Details are given in annex 3.

The frequency and types of illness episode showed a narrow range of variation across the eight study villages and the pattern of health care responses was also similar (indicating the robustness of the illness record method), varying mainly by the physical accessibility of health care services. The findings broken down by study village and commune have been reported (Tipping *et al*. 1994). For this secondary analysis, we combine the quantitative data from the eight study villages and report on health care seeking of the sample as a whole.

Quantitative analysis: household sample and illness episodes

We surveyed a total of 664 households. Other than in annex 2, we report on the 656 households on which we have income data. These 656 households comprised 3210 people, of whom 2995 were resident at the time of the baseline research. We used the resident household members as the relevant sample population, although total household income included remittances from absent members. Of the 656 households, 438 were poor according to our poverty definition and they comprised 2185 people. The 218 non-poor households consisted of 810 people. Poor households had on average more members (5.0 resident) than non-poor households (3.7 resident).

Illness episodes were reported from 335 poor households (76 per cent of total) and 158 non-poor households (72 per cent of total), containing respectively 1697 and 609 people. These households reported an average of just over two episodes each (range 1-8) during the illness record period of 16½ weeks. Poor households reported a total of 810 episodes in 758 people; thus 35 per cent of the members of all poor households reported illness. Non-poor households reported 357 episodes in 335 people; thus 41 per cent of the members of all non-poor households reported illness. The illness episodes resulted in a total of 1229 acts of ambulatory health care and 21 hospital admissions in poor households and 596 ambulatory health care acts and 14 admissions in non-poor households.

Rates of health care utilisation and expenditure may be expressed for a whole population sample or only for those people reporting illness. These two types of rate are both valid, but they express different things. If a whole population group is the denominator in the calculation, rates inform us about the absolute health care seeking of the group and are determined, not only by the pattern of health care use and expense, but also by the rate and severity of illness. Health care rates

using people reporting illness as the denominator tell us what people do once they are ill and inform us about health care seeking relative to illness frequency. The latter type of rate is often calculated in facility based surveys. However, the distinction between these two types of rate is not always made clear in the literature, even when comparisons are made between different survey findings. In this report we calculate consultation and expenditure rates both ways, i.e. per person or per household of the total group, and per person or per household reporting illness. Rates are grossed up from the illness record period to a year.

STUDY COMMUNES AND COMMUNE HEALTH CARE

Basic commune characteristics

Although Quang Ninh Province has important coal mining and power industries, the main occupation in the study communes is farming, with state employment (mainly mining and social services), small scale shipping, trading and casual (farm) labouring among the other occupations. As well as the main occupation, most households engage in sideline activities like vegetable gardening, animal rearing, fishing, labouring and trading. Farming is mainly rice cultivation and two (or sometimes three) crops are reaped per year. The land is of variable quality and in some places the soil is salty.

In 1991 the size of the study communes ranged from 727 to 1734 households, comprising 3036 to 8441 people, living in 4 to 10 villages. Average household size was just under five members. Primary school enrolment varied from about half to all eligible children, while secondary school rates were somewhat lower.

Through the mid 1990s, the communes generally increased in prosperity, in part as a result of an expansion in trading. Land reclamation and desalination improved soil quality and agricultural productivity. Populations grew by natural increase and in-migration. Access roads, village paths and commune infrastructure were improved.

Commune health services

At time of baseline research

The provincial health service had benefited from a development project financed by the Swedish International Development Authority (SIDA) for a number of years prior to our research starting in 1992. The project had provided the CHSs with basic equipment, financed refresher training of CHS staff in primary health care, and supported the development of a district supervisory system (Segall 1987: annex 4). As a result, our study CHSs were in a better state than many in Vietnam at that time. Our technical evaluation of the CHSs and their services has been described in detail (Tipping *et al*. 1994).

All the study communes had a CHS, with most households located not more than 3-4 kilometres (10-20 minutes away), although access along connecting dirt roads could be difficult in the rainy seasons. This level of physical access to CHSs is typical for Vietnam (SPC and GSO 1994: table 3.4).

In 1992 the CHS buildings varied greatly in their state of repair and general facilities. All had seen a decrease in the number of CHS staff since the economic reforms and at the time of the research had 3-4 personnel each. Only one commune had maintained a VHW network. Two communes had a small army clinic that could be used by the general public. Drugs were readily available at this time.

We found that generally CHS curative care conformed quite well to official treatment guidelines and CHS workers were using a half or more of the key essential drugs identified for the commune level. However, they also often prescribed non-essential drugs and tended to overprescribe, especially with antibiotics. The CHSs were conducting only a handful of curative consultations a day (although VHWs added considerably to public health care in one commune).

By contrast, preventive programmes were quite actively pursued and in two communes were implemented in a comprehensive and integrated way. Rates of full immunisation of children by the age of one year were 85-97 per cent in the communes and the target diseases had virtually disappeared. By contrast, maternity and family planning services were in much need of improvement in both coverage and quality.

In general, the quality of CHS care related more to the degree of support given to the health workers by the commune authorities - both politically and in terms of salary levels - than to the wealth of the communes as such. A better service was also found to be related to CHS worker salary levels elsewhere in rural Vietnam (Ensor and Pham 1996).

In addition to commune public services (the CHS, VHWs and army clinics), commune members could consult resident private practitioners. These were mainly retired public health workers (CHS workers, VHWs, state or army health workers, most of them assistant doctors), as well as traditional herbalists. People could also buy OTC finished drugs from retail outlets (which included the CHS pharmacy) or informal drug or herb vendors; make their own herbal home remedies (often from purchased ingredients); or attend a state hospital or its outlying polyclinic. These were the categories of health care option that we used in our analysis.

During mid 1990s

During the course of the mid 1990s the CHS buildings were rehabilitated, mainly with finance from the district people's committees. The number of public health workers remained quite stable.

Recurrent CHS expenditures per commune member increased in real terms during this period (Segall *et al*. 1999: table 3). With the taking over in 1993 of CHS staff salaries by the state, the average public income of CHS staff nearly doubled in real terms between 1992 and 1996, and staff morale and performance improved. Mainly as a consequence of higher basic salaries, the income of CHS staff from drug mark up fees halved as a proportion of total public income, from an average of 13.5 per cent in 1992 to 6.4 per cent in 1996 (Segall *et al*. 1999: table 4). The real value of CHS drug sales decreased during this period, probably in part as a result of lower relative drug prices, but also in part because of the reduced incentive for CHS workers to overprescribe.

Of CHS recurrent expenditure, households financed nearly two thirds, mostly by buying drugs but also by paying service fees. As a result of the state takeover of CHS salaries, the government budget increased its share of CHS recurrent finance from an average of 3 per cent in 1991 to 33 per cent in 1995, while that of the CPCs fell from an average of 29 per cent to only 8 per cent. By the time of our intervention research, the CPCs regarded the running of the CHSs as mainly a district health responsibility and appeared reluctant to commit more funds to the commune health service.

The annual rate of curative consultations recorded by CHSs remained about 0.2-0.4 per commune member during the mid 1990s, similar to facility based rates of 0.3-0.5 per person found in a Ministry of Health survey in three provinces (World Bank 1992b: para 4.80). Preventive programmes that were strong in 1992 remained strong or became stronger over next few years, while programmes that were weak in 1992 remained weak or improved only slightly. The CHSs received monthly visits from district health centre staff, which incorporated advisory as well as inspectorial functions and were based on supervisory checklists. The number of private practitioners increased in some of the communes, as did probably the use that people made of private health services. By 1997, private practitioners were possibly delivering a volume of ambulatory care similar to that of the CHSs (Segall *et al*. 1999).

HOUSEHOLD HEALTH CARE SEEKING AND EXPENDITURE

Household sample: representativeness and income

The average monthly income of our household sample was 49 400 dong per person. Of the people of working age 79 per cent were farmers, which compares with an average of 73 per cent in the study communes as a whole (Tipping *et al*. 1994: derived from table 1). According to CPC data, the average monthly income of farming households in the study communes in 1991 was about 32 100 dong per

person. Given the rate of growth of farming household incomes in the communes in the first half of the 1990s, these would be expected to average about 40 000 dong per person in 1992 (Segall *et al*. 1999: derived from table 4). Given again that our household sample included some people (like state employees and traders) earning more than farmers, our sample appears to be reasonably representative of the commune populations in terms of both occupation and income.

The average monthly income per person of the poor households in the sample was 21 800 dong, compared with 104 800 dong for the non-poor households. In the VLSS of 1992-93, the average income of the lowest expenditure quintile for rural areas was almost double that of the poor households in our sample (SPC and GSO 1994: table 7.4.1), so we were studying a poorer set of people than the 'poor' of the national survey. Similarly, poor households comprised 67 per cent of our sample, compared with a national average of 22 per cent of rural households in 1993 (a year later) using the same poverty line criterion (World Bank 1995: box 1.2). It seems that our study communes at the time of the baseline research in 1992 had not kept up with the rise in incomes across the country, although they would make rapid progress in the following years (see below).

Illness episodes

Whole sample

The average rate of illness episodes for the whole sample was 1.23 per person per year (table 2).

Most studies of self-reported illness are conducted by cross sectional surveys and record the prevalence of illness during a recall period. It is difficult to compare such prevalence rates with the incidence rates of acute illness that we have recorded by longitudinal survey, especially as prevalence surveys rarely record the duration of illness. However, Mbugua (1993) conducted a longitudinal survey of rural households in Kenya in 1989-90 and found an average incidence of 2.5 illness episodes per person per year. The infant mortality rate in Kenya around that time was 67 per 1000 live births (World Bank 1993: table 28), while in Vietnam it was estimated to be only 34-45 already by the mid to late 1980s (National Committee for Population and Family Planning 1990: table 6.1; General Statistical Office 1991: table 10.2). Vietnam had a better control of communicable diseases and acute nutritional deficiency, while still having a young population without a heavy burden of chronic degenerative disorders. The rates recorded in the two studies therefore appear compatible with each other.

Self-perceived illness rates varying from of 0.7-2.5 per person per year have been variously reported for Thailand (1981), Pakistan (1982-83), Indonesia (1985) and Benin and Guinea (1989-91), although in these cases annual rates are only indicative as they were grossed up from prevalence figures (Murray, Feachem, Phillips and Willis 1992; Berman, Ormond and Gani 1987; Soucat *et al*. 1997).

Table 2. Illness episodes by duration and household income group

Income group	Duration		
	1-7 days	**> 7 days**	**Total**
Poor			
• number of episodes	343	467	810
• mean/person/year (95% confidence interval)	0.49[1] (0.43-0.55)	0.67 (0.61-0.73)	1.17[2] (1.09-1.25)
Non-poor			
• number of episodes	156	201	357
• mean/person/year (95% confidence interval)	0.61[1] (0.53-0.69)	0.78 (0.64-0.92)	1.39[2] (1.19-1.59)
Total			
• number of episodes	499	668	1167
• mean/person/year (95% confidence interval)	0.53 (0.49-0.57)	0.70 (0.62-0.78)	1.23 (1.11-1.35)

1. Significantly different ($p<0.05$).
2. Significantly different ($p<0.05$).

The illness rates recorded on our study are thus plausible in the epidemiological context of rural Vietnam.

Illness severity and duration

Illness severity is often judged by being confined to bed or the need to take time off work or school. We found that these indicators were not useful markers of illness severity in the sociocultural conditions of our study communes and used instead a reported illness duration of more than seven days as a proxy for severity. Table 2 shows that just over a half of reported illness episodes lasted over seven days, a similar proportion to that reported in rural China of illnesses resulting in people staying away from work or school (Yu, Cao and Lucas 1997). Illness duration appears to be a reasonable proxy for severity.

Poor versus non-poor

Table 2 shows that non-poor households reported a higher average rate of illness per person than poor households ($p<0.05$), the difference being more marked in the case of shorter episodes. The higher average rate per person also translated into a higher proportion of household members reporting illness: 41 per cent in non-poor households and 35 per cent in poor households (see Methods). Similarly, in the VLSS of 1992-93, illness reporting by the lowest quintile was less than that of the richer quintiles (SPC and GSO 1994: table 3.1.1).

Although it has not been widely commented upon, a higher rate of illness reporting by better off people has been documented in a number of countries, including those as diverse as China, Morocco, Dominican Republic, Jamaica, Peru, Ivory Coast and Ghana (Yu *et al*. 1997; Hotchkiss and Gordillo 1999; Bitran 1989; Theodore, Stoddar, Yearwood and Thomas 1999; Petrera and Cordero 1999; Murray *et al*. 1992). Since morbidity is not actually greater among richer people (generally the reverse is the case), a plausible explanation is that poorer people have 'less time' to be sick and, as a consequence, tend to ignore illness if they possibly can. This explanation is supported by our observation that the difference in non-poor/poor reporting rates was greater for milder illnesses, when households have more discretion in how they judge sickness. More frequent reporting of mild illnesses by wealthier households has also been observed in rural Indonesia (Berman *et al*. 1987). This tendency of the poor to disregard illness has been observed in low income rural communities in seasons when the opportunity costs of time are high and the availability of money and assets are low (Sauerborn, Nougtara, Hein and Diesfeld 1996).

Ambulatory health care acts

Hospital admissions are relatively rare events that usually require a decision on the part of a doctor. In this report we focus on household seeking for ambulatory health care.

Number of acts per episode

All households reporting an illness did something in response to the episode, a pattern of behaviour broadly the rule in Vietnam (World Bank 1995: annex 4.3, table 2). Table 3 shows that the average number of ambulatory health care acts per illness episode was 1.56. Given that the 95 per cent confidence interval for this average is very narrow at 1.52-1.60, it seems that most households responded to illness in a rather simple way, performing 1-2 health care acts per episode. The average figure is similar to average rates of act per episode of 1.22-1.60 reported in rural Burkina Faso (Sauerborn *et al*. 1996) and 2.02 in rural Indonesia (Berman *at al*. 1987).

Not surprisingly, non-poor households in our study responded to illness with more acts on average than poor households. This difference was small though significant ($p<0.01$) and was more marked for shorter illnesses (table 3).

Table 3. Ambulatory health care acts per illness episode by duration and household income group

Income group	Duration		
	1-7 days	> 7 days	Total
Poor			
• number of acts	469	760	1229
• mean/episode (95% confidence interval)	1.37[1] (1.31-1.43)	1.63 (1.55-1.71)	1.52[2] (1.48-1.56)
Non-poor			
• number of acts	259	337	596
• mean/episode (95% confidence interval)	1.66[1] (1.56-1.76)	1.68 (1.56-1.80)	1.67[2] (1.59-1.75)
Total			
• number of acts	728	1097	1825
• mean/episode (95% confidence interval)	1.46 (1.40-1.52)	1.64 (1.58-1.70)	1.56 (1.52-1.60)

1. Significantly different ($p<0.01$).
2. Significantly different ($p<0.01$).

Broad pattern of household choice

Whole sample

Of the 1825 ambulatory acts recorded, 24 per cent were use of home remedies, 36 per cent were OTC drug purchases, and 39 per cent were health care consultations (table 4). Drug purchases were similarly found elsewhere in rural Vietnam to comprise about a third of health care acts (Ensor and Pham 1996) and self-treatment (corresponding to our categories of home remedies and OTC drug purchases) was similarly found in the 1992-93 VLSS to be used by 67 per cent of rural people reporting illness (SPC and GSO 1994: table 3.2.4).

Table 4. Types of ambulatory health care act by duration of illness and household income group
% (number of acts)

Income group	Duration		
	1-7 days[1]	> 7 days	Total
Poor			
• home remedies	23 (109)	23 (176)	23 (285)
• over the counter drugs	45 (213)	33 (255)	38 (468)
• consultations (total)	32 (147)	43 (329)	38 (476)
-commune public	*24 (110)*	*22 (171)*	*23 (281)*
-commune private	*7 (34)*	*14 (106)*	*11 (140)*
-state hospital	*1 (3)*	*7 (52)*	*4 (55)*
Non-poor			
• home remedies	28 (71)	24 (80)	25 (151)
• over the counter drugs	35 (90)	32 (107)	33 (197)
• consultations (total)	37 (97)	44 (150)	42 (247)
-commune public	*26 (68)*	*22 (75)*	*24 (142)*
-commune private	*9 (24)*	*12 (40)*	*11 (64)*
-state hospital	*2 (6)*	*10 (35)*	*7 (41)*
Total			
• home remedies	25 (180)	23 (256)	24 (436)
• over the counter drugs	42 (303)	33 (362)	36 (665)
• consultations (total)	33 (244)	43 (479)	39 (723)
-commune public	*24 (178)*	*22 (246)*	*23 (423)*
-commune private	*8 (58)*	*13 (146)*	*11 (204)*
-state hospital	*1 (9)*	*8 (87)*	*5 (96)*

1. Difference between poor and non-poor for the three main types of act χ^2 $p<0.05$

Because of different health sector structures in different countries, it may not be meaningful to compare across countries the details of health care options taken up by households. However one clear fact, valid across many countries, is that self-treatment in one form or another is a very common household choice. For example studies in rural areas of Indonesia (Berman *et al*. 1987) and Sierra Leone (Fabricant, Kamara and Mills 1999) similarly found that OTC drug purchases comprised about a third of health care acts, herbal home treatments comprised a further fifth of acts, and formal health care consultations were a minority of total health care responses.

By contrast in rural China, where pure drug outlets are relatively uncommon, people are more likely to consult health care providers: about three quarters of people reporting illness in rural counties have been found to make a formal consultation (Tang *et al*. 1994: table 4.7), with other reported rates varying from three fifths in poor counties (Yu *et al*. 1997) to four fifths in a relatively affluent rural country on the suburbs of Beijing (Yip, Wang and Liu 1998).

Poor versus non-poor

Table 4 also shows that differences in the pattern of health care seeking between poor and non-poor households were small (a finding also of the above study in Sierra Leone). Only in the case of shorter (milder) illnesses, in which households would have greater discretion in health care choices, was there a statistically significant difference (χ^2 $p<0.05$), with poor households opting more for OTC drugs, and less for home remedies and consultations.

Home remedies were uncommon as a first health care act in an illness and were used more as a complement to formal or 'modern' health care measures. Their greater use by the non-poor probably reflected the facts that they were in a position to carry out more acts per illness episode (table 3) and had more time to prepare home treatments.

Greater reliance on OTC drugs by the poor was also found in other rural districts of Vietnam (Ensor and Pham 1996) and self-treatment generally was found to be adopted more often by poorer than richer quintiles in the VLSS (SPC and GSO 1994: table 3.2.4). Less use of formal health care providers by the poor was also found in poor rural counties in China (Yu *et al*. 1997).

Choice of provider for consultation

Whole sample

With respect to choice of health care provider for consultation, table 4 shows that 23 per cent of total ambulatory acts were with commune public services, 11 per cent with commune private practitioners, and 5 per cent with state hospital services. (Most of the private consultations were with private assistant doctors, while 29 per cent were with traditional herbalists.) Taking these three types of formal provider plus OTC drug purchases as the main available health care options, it is noteworthy that the frequency of household use was in inverse ranking to their average cost (see below). This applied to poor and non-poor households and shorter and longer illnesses.

The VLSS also found an overall 5 per cent use of hospital outpatient services in rural areas, but a much lower use of public clinics at only 7 per cent and a higher use of private practitioners at 18 per cent (World Bank 1995: annex 4.3, table 2). These difference may have been due to the donor supported improvements in CHS services in our study communes which may have attracted more patients and the possibly lesser availability of private practitioners in the communes than in rural areas as a whole.

Poor versus non-poor

In both our study (table 4) and the VLSS, non-poor households made proportionately more use of expensive hospital services than the poor. But in our study the poor and non-poor made the same percentage use respectively of commune public and private consultations, whereas in the VLSS the lower quintiles made proportionately more use of CHS services and richer quintiles made proportionately more use of private services. Again this difference may be due, at least in part, to the particularities of the health services in the study communes. But some of the explanation lies in the fact that the national survey reports its findings by expenditure quintile with urban and rural areas combined and use of private medical services is particularly high among the urban rich (World Bank 1995: annex 4.3, table 2).

Effect of illness duration

The main differences in health care use according to duration of illness, applying to both poor and non-poor households, were that with longer illnesses households made proportionately less use of OTC drugs and more use of consultations, especially with private practitioners and hospitals (table 4). This pattern of change of choice with longer illness was also observed in Laos (Holland *et al*. 1995: figure 6). Generally greater use of formal health care with more severe illness has been reported in rural China (Tang *et al*. 1994: table 4.8) and Indonesia (Berman *et al*.

1987). As illnesses became more serious, the discretion of households to choose cheaper options is reduced.

Rates of ambulatory consultation and hospital admission

Table 5 shows total rates of ambulatory consultation and the rates with the three different types of health care provider.

Total ambulatory consultations

Whole sample

The average annual rate of consultation was O.76 per person or 2.09 per person reporting illness. This is compatible with an annual rate of 0.98 per rural person found in the 1992-93 VLSS (World Bank 1995: annex 4.3, table 3), given the low income of our study communes at the time.

The Vietnamese rates appear to be quite low by international standards. Annual consultation rates of 2.5-3.1 per person were reported for rural China in the second half of the 1980s (Yu 1992: derived from table 37; Tang *et al*. 1994: table 4.5). The Vietnamese findings are also lower than the rate of 1.7 per person found in rural Indonesia in 1985 (Berman *et al*. 1987: derived from table 1) and of 2.1 per person in rural Kenya in 1989-90 (Mbugua 1993), although the rates in the three countries are more or less proportional to the rates of reported illness.

Poor versus non-poor

Table 5 shows that non-poor households had a greater average annual consultation rate (0.96 per person) than poor households (0.69 per person), the difference being statistically significant ($p<0.01$). Given the higher rate of reported illness of the non-poor, the difference was not so great per ill person ($p<0.05$).

The average annual consultation rate (0.72 per person) of the lowest quintile in the VLSS is compatible with our observed rate in poor households and higher rates were similarly found nationally with higher income. This was also found in poor rural counties of China (Yu *et al*. 1997) and the greater likelihood of households consulting formal health care providers with both increasing family income and illness severity has been observed quite widely (Berman *et al*. 1987; Mbugua 1993; Li, Cao, and Lucas 1997).

Table 5. Health care consultations by type of provider and household income group

Income group	Type of provider			
	Commune public	**Commune private**	**State hospital**	**Total**
Poor				
• number of consultations	282	140	55	477
• mean/person/year (95% confidence interval)	0.41[1] (0.36-0.46)	0.20 (0.16-0.24)	0.08[2] (0.05-0.11)	0.69[4] (0.62-0.76)
• mean/ill person/year (95% confidence interval)	1.17 (1.03-1.31)	0.58 (0.46-0.69)	0.23[3] (0.15-0.31)	1.98[5] (1.80-2.16)
Non-poor				
• number of consultations	142	64	41	247
• mean/person/year (95% confidence interval)	0.56[1] (0.45-0.67)	0.25 (0.18-0.32)	0.16[2] (0.11-0.21)	0.96[4] (0.82-1.10)
• mean/ill person/year (95% confidence interval)	1.34 (1.22-1.46)	0.60 (0.52-0.68)	0.39[3] (0.26-0.52)	2.32[5] (2.06-2.58)
Total				
• number of consultations	424	204	96	724
• mean/person/year (95% confidence interval)	0.45 (0.40-0.45)	0.22 (0.19-0.25)	0.10 (0.08-0.12)	0.76 (0.69-0.83)
• mean/ill person/year (95% confidence interval)	1.22 (1.10-1.34)	0.59 (0.50-0.68)	0.28 (0.21-0.35)	2.09 (1.94-2.24)

1. Significantly different ($p<0.05$).
2. Significantly different ($p<0.01$).
3. Significantly different ($p<0.05$).
4. Significantly different ($p<0.01$).
5. Significantly different ($p<0.05$).

Ambulatory consultations by type of provider

Whole sample

Disaggregating consultations by type of provider (table 5), the average annual rate with commune public services was 0.45 per person (1.22 per ill person), with private practitioners 0.22 per person (0.59 per ill person), and with hospitals 0.10 per person (0.28 per ill person). This falling gradation of use confirms in terms of absolute rates the decreasing use of options with increasing cost (see below).

The rate for commune public services falls within the range of 0.16-0.70 annual CHS consultations per person recorded in studies in various provinces of Vietnam in the early 1990s, although it is double that found by the VLSS for the use of public clinics in rural areas (World Bank 1992b: para 4.80; World Bank 1995: annex 4.3, table 3; Ensor and Pham 1996). The rate found for hospital outpatient

use was virtually identical in our study and the VLSS. It is possible that the greater use of commune public services in our study communes was a result of the rehabilitation of CHS services that took place prior to the time of our research. The joint annual rate for public (commune and hospital) consultations was 0.55 per person in our study and 0.38 per person in the VLSS.

These Vietnamese rates for public consultation (like the overall consultation rate) appear quite low by some international standards, with annual rates of over 3.0 per person recorded in poor rural counties of China (Yu *et al*. 1997: derived from table 2), 1.1 per person in rural Kenya (Mbugua 1993) and 0.8 per person in rural Indonesia (Berman *et al*. 1987: derived from table 1). On the other hand, the rate of public consultation in our study is similar to that found in rural areas of many sub-Saharan African countries operating user fee schemes (Stierle, Kaddar, Tchicaya and Schmidt-Ehry 1999).

The rate in our study of private consultations was about a third of that recorded for the rural areas by the VLSS and a fifth of those observed in the studies in China, Kenya and Indonesia, reflecting the lesser development of non-public health care providers in our study communes in particular and in Vietnam in general.

Poor versus non-poor

On average the non-poor in our study made slightly more use than the poor of commune public services ($p<0.05$), a difference that failed to reach statistical significance when calculated per person reporting illness (table 5). The greatest difference between the income groups was with hospital outpatients, which the non-poor used at twice the rate per person ($p<0.01$) and 1.7 times the rate per person reporting illness ($p<0.05$). Thus, while hospital outpatient care remained an uncommon option for the non-poor (table 4), they had much more access to it than the poor.

The greater differential in non-poor/poor use of expensive higher level services, compared to cheaper lower level care, was found also in the VLSS, in rural China (Yu *et al*. 1997; Yip *et al*. 1998) and in Kenya (Mbugua 1993).

By contrast, in our study, of the three provider options available to households for consultation, only private practitioners were used virtually as much by the poor as the non-poor. This contrasts with the much higher use of the private medical sector (particularly doctors) by the richer (more urban) quintiles in the VLSS.

Compared with the lowest expenditure quintile in the VLSS, the poor in our study consulted public clinics about twice as often, private practitioners about half as often and hospitals at about the same rate.

Multivariate analysis

The findings with household income group averages shown in both tables 4 and 5 were confirmed on multivariate analysis of individual illness episodes. Multinomial regression was used to identify the probability, relative to the purchase of OTC drugs, that a first health care act would be a health care consultation, either of any kind or with one of the three types of provider (table A3.1).

Both membership of a non-poor household ($p<0.05$) and longer illness ($p<0.01$) were related positively to the likelihood of a health care consultation.

Longer illness was associated with a nearly 1½ times greater likelihood of a consultation with commune public services ($p<0.05$), more than twice the likelihood of a private consultation ($p<0.01$), and more than 11 times the likelihood of a consultation with hospital services ($p<0.01$). Compared with poor households, non-poor households were nearly 1½ times more likely to consult commune public services ($p<0.05$) and more than 2½ times more likely to consult hospitals services ($p<0.01$), but not significantly more likely to consult private practitioners.

Hospital admissions

Hospital inpatient treatment is quite rare: the average admission rate in our study (0.04 per person per year) was only about 5 per cent of the overall rate of ambulatory consultation. Non-poor households made more use of inpatient care on average than poor households (respectively 0.05 and 0.03 admissions per person per year). The overall admission rate was about a half of that recorded for rural areas by the VLSS and the rate for poor households was about half of that recorded for the lowest expenditure quintile. The national survey found a differential in admission rate between the rich and poor only slightly greater than in our study.

Similar hospitalisation rates to those of our study were found in rural China in the 1980s (Yu 1992: table 37; Tang *et al*. 1994: table 4.11), although a slightly higher annual rate of nearly 0.06 per person was found in poor rural counties in 1993 (Yu *et al*. 1997). The latter study found a non-poor/poor differential in admission rate similar to that in our study, the main reason for the difference being that the poor had more often to decline admission because of lack of money.

Health care expenditure

Fee and non-fee costs

Patients pay service and drug fees in the public health system. Although there are national guidelines on fee levels for different services, charging practice is quite variable across provinces, districts and facilities. Drugs are the main component of fees, even in hospitals. Drugs are charged at market prices plus a mark up of up to 15 per cent. Service fees, especially in hospitals, have tended to increase in real terms during the 1990s, although this has been offset by a decline in drug prices. Fee revenue is retained by collecting facilities and is used to pay personnel salary allowances, hire contract staff and buy supplies and other operating inputs. At the commune level, service fees are mostly low or non-existent and almost all the cost of a curative consultation is for drugs. Preventive services and treatment administered under national health programmes should be dispensed free of charge, although in practice health staff may charge for drugs. Birth delivery fees are levied and have increased in recent years. Private practitioners usually charge an inclusive fee for service and drugs.

In addition to official public sector fees there are what may be called non-fee costs. One of the most important of these is the informal ('under the table') payment that patients are required to make to public health workers in order to receive (decent) treatment. These payments can be as much as 10 000 dong at the commune level and 50 000 dong or more in the state health system. The amounts of these informal charges are therefore far from trivial. An apparent increase in the practice of informal payments to health workers has been reported in other transitional economies (Ensor and Savelyeva 1998).

Another major non-fee cost of inpatient care is that of food for patients and subsistence for family carers, which together may amount to as much as 15 000 dong or more per admission day. Transport costs are incurred mainly for travel to hospitals. Of the total cost of hospital admissions, about one third may be official fees and two thirds non-fee costs. Health care costs cannot be judged, therefore, from formal fees alone.

Here we report total direct health care expenditure of households, required to meet both official fees and non-fee costs. As will be seen, median costs were generally considerably below mean costs, as the means were skewed upwards by relatively small numbers of much higher expenditures. This has been found also in other settings (Fabricant *et al*. 1999). Because of the difficulties of interpreting exchange rates of different currencies at different times in terms of local purchasing power, we will only compare absolute health care costs with those found in other studies in Vietnam.

In poor households in particular, illness may result in heavy opportunity costs, both of direct health care expenditures and of production forgone by the sick person

and family carers. Long term damage can occur to the household economy from having to incur debts or sell productive assets to meet illness related costs. The sale of consumption reserves and the reduced consumption of essential items, notably food, may in turn have negative effects on the future health of family members. We investigated the opportunity costs of household illness qualitatively, but did not attempt to quantify longer term economic, welfare or health consequences. We have also not investigated the need for wider social assistance or safety nets for the poor, but have limited our discussion of financial assistance to policies of exemption from official public health service fees.

Cost per type of health care act

Table 6 shows the costs to households of the different types of health care act.

Ambulatory options: whole sample

Home remedies were by far the cheapest health care option available to households, averaging 2300 dong per purchase. The average cost of OTC drugs was nearly six times greater at 13 300 dong, with commune public consultations slightly more expensive again at 15 000 dong. Private consultations with an average of 29 500 dong were twice as expensive as commune public consultations, with hospital consultations at 53 600 dong being nearly twice as expensive again. We have pointed out already that the frequency with which households chose the main ambulatory options was in inverse ranking to their average cost.

The 1992-93 VLSS (World Bank 1995: annex 4.3, table 7) recorded costs similar to ours for self-medication and private consultations (with secondary medical cadres). On the other hand, the average cost of a rural CHS consultation in the national survey was, at 31 000 dong, about twice as high as our finding. Ensor and Pham (1996) in a study in rural districts two years later arrived at a cost estimate for a CHS visit of 28 000 dong (23 300 dong in 1992 prices), roughly midway between our finding and that of the national survey. We can only speculate that our lower CHS cost estimate might have been a positive result of the donor supported refresher training in essential drugs use received earlier by the CHS staff of our study communes. The costs for hospital outpatient visits in rural areas were about 1½ times higher in the VLSS, and twice as high in the study by Ensor and Pham, as in our study. As mentioned, public health care charges are very variable in Vietnam.

A similar hierarchy of unit costs across rural health care options has been found in China and elsewhere (Yu *et al*. 1997; Berman *et al*. 1987; Fabricant *et al*. 1999).

Table 6. Expenditure per health care act by type of act and household income group (dong '000)

Income group	Home remedies[1]	Over the counter drugs[1]	Consultation			State hospital admission[2]
			Commune public[1]	Commune private[1]	State hospital[1,2]	
Poor						
• number of acts	285	444	281	137	48	21
• mean/act	2.6	11.8	13.4	29.6	40.4	230.7[3]
(95% confidence interval)	(1.8-3.4)	(10.0-13.6)	(11.2-15.6)	(22.2-37.0)	(26.9-53.8)	(95.7-365.8)
• median/act	0.0	6.0	8.0	12.0	23.0	102.8
Non-poor						
• number of acts	151	183	139	64	26	14
• mean/act	1.6	16.9	18.1	29.2	78.0	588.9[3]
(95% confidence interval)	(0.8-2.4)	(11.9-21.9)	(11.9-24.3)	(19.2-39.2)	(26.0-130.0)	(336.1-841.7)
• median/act	0.0	8.0	7.0	10.0	36.0	538.7
Total						
• number of acts	436	627	420	201	74	35
• mean/act	2.3	13.3	15.0	29.5	53.6	373.5
(95% confidence interval)	(1.7-2.9)	(11.3-15.3)	(12.4-17.6)	(23.3-35.7)	(33.2-74.0)	(232.9-514.1)
• median/act	0.0	6.5	8.0	11.7	25.0	233.7

1. One way analysis of variance shows that the mean cost differences between the various types of ambulatory health care act are significant at the 5 per cent level or less for each income group, except between OTC drug purchases and commune public consultations and, in the case of non-poor households, between commune public and private consultations.
2. The hospital cost analysis excludes zero priced acts (22 consultations and one admission) resulting from fee exemption, which certain categories of patient (like public employees and people on social assistance) enjoyed in state facilities.
3. Difference $p<0.05$ (t-test).

Ambulatory options: poor versus non-poor

Table 6 shows that, with the exception of home remedies and private consultations, the non-poor spent more per ambulatory act on average than the poor but, with the exception of hospital consultations, the differences were not large and none is statistically significant. The average expenditures per contact by the poor households were mostly similar to those found for the lowest expenditure quintile in the VLSS. Not surprisingly, bigger spending increases with rising income were found in the national survey, which spanned the wider income range of urban and rural areas. However, again in a rural setting in China, greater expenditure by the better off per ambulatory contact, where it existed at all, was quite modest (Yu *et al*. 1997).

To put these costs into the perspective of household income, the average expenditure in our study on a commune public consultation, for example, represented 12 per cent of the average monthly income of poor households, but only 5 per cent of the monthly income of non-poor households. The difference was even greater for median costs per consultation, which represented 7 per cent and 2 per cent of average monthly income of poor and non-poor households respectively. Thus, while the non-poor/poor ratios of average rates, and costs, of commune public consultations were 1.4 in both cases (tables 5 and 6), the non-poor/poor ratio of average consultation cost as a percentage of monthly income was 0.4. In other words, although the poor consumed somewhat less commune public health care than the non-poor, and incurred somewhat less costs as a result, what health care they did obtain put a very much greater strain on their household resources.

Hospital admission

Table 6 shows that the cost of hospital admission is in an expense class of its own. The average admission cost for the whole sample was 373 500 dong (the most expensive admission was as high as 2 million dong). This figure is considerably higher than the average cost of 200 900 dong found for rural areas in the VLSS. The difference is probably because our expenditure figure covers both fee and non-fee costs (the latter being particularly high for hospital admissions), whereas the national survey includes only service and drug fees (World Bank 1995: annex 4.3, table 7).

In our study, non-poor households spent on average much more per admission than the poor ($p<0.05$). Not surprisingly, the VLSS showed an even bigger spread of costs across the range of national quintiles. For the non-poor in our study, the average cost of one admission (588 900 dong) represented over 150 per cent of average monthly income, while for poor households the cost (230 700 dong) represented over 200 per cent of monthly income. Even the median costs of hospital admission represented well over 100 per cent of monthly income of non-poor households and nearly 100 per cent of monthly income of poor households.

In poor rural counties of China, a hospital admission was found to cost an average of nearly 100 per cent of the monthly *net* income of high income households and as much as 700 per cent of monthly *net* income of low income households (Yu *et al*. 1997: derived from table 8). It is no wonder that a hospital admission can constitute a catastrophic economic event in the life of households and some - especially the poor - forgo inpatient treatment because of the cost (Segall *et al*. 1999; Yu *et al*. 1997).

Expenditure on ambulatory care per illness episode by household income group and season

Over the whole illness record period, average household expenditure on ambulatory health care per illness episode was 21 900 dong (table 7). On average non-poor households spent nearly half as much again per episode as poor households ($p<0.05$), although the median costs were similar. This relation of household income to spending per episode was confirmed in multiple linear regression of individual episodes, in which both household income per person and (not surprisingly) longer illness duration were related positively to ambulatory expenditure per episode (table A3.2, $p<0.01$ in both cases).

We wanted to see if health care spending was particularly constrained during lean periods of the year when rice stocks are run down and families may go into debt. As the total expenditure on health care at different times of the year will be influenced by the morbidity pattern of the season, including the frequency of illness episodes, we used the average expenditure per episode as the indicator of differential spending ability during different seasonal periods.

Table 7 also shows that average ambulatory health care expenditure per episode for the whole sample was significantly less in the lean season than in the plentiful season ($p<0.05$). The tendency to avoid health care consultations (especially expensive ones) and reduce health care spending at lean times of the year has been described in poor rural communities in Africa (Sauerborn *et al*. 1996; Fabricant *et al*. 1999).

In our study, non-poor households scarcely reduced their spending per episode in the lean season. By contrast, poor household expenditure per episode decreased by nearly a half compared with that in the plentiful season ($p<0.01$). In fact, most of the overall difference between poor and non-poor households in average expenditure per episode is explained by the nearly twofold difference in spending in the lean season ($p<0.05$). Although non-poor households did spend slightly more per episode than poor households in the plentiful season, the difference at this time does not achieve statistical significance.

Thus a seasonal lack of funds, unimportant in the case of non-poor households, critically constrained the health care spending of poor households and explains much

of the difference in overall spending on ambulatory health care between the poor and non-poor.

Table 7. Expenditure on ambulatory health care per episode by season and household income group (dong '000)

Income group	Plentiful season	Lean season	Total
Poor			
• number of episodes	532	278	810
• mean/episode (95% confidence interval)	22.6[1] (19.4-25.8)	13.4[1,3] (11.0-15.8)	19.5[4] (17.3-21.7)
• median/episode	10.0	7.4	10.0
Non-poor			
• number of episodes	195	162	357
• mean/episode (95% confidence interval)	28.6 (20.8-36.4)	25.7[3] (15.7-35.7)	27.3[4] (21.1-33.5)
• median/episode	15.0	7.0	10.6
Total			
• number of episodes	727	440	1167
• mean/episode (95% confidence interval)	24.3[2] (21.1-27.5)	18.0[2] (14.0-22.0)	21.9 (19.5-24.3)
• median/episode	11.0	7.0	10.0

1. Significantly different (p<0.01).
2. Significantly different (p<0.05).
3. Significantly different (p<0.05).
4. Significantly different (p<0.05).

Annual expenditure by household income group, duration of illness and type of health care act

Ambulatory health care

Average annual expenditure of households on ambulatory health care was 26 900 dong per person or 73 600 dong per person reporting illness (table 8). The non-poor spent 1.7 times more per person than the poor (p<0.01) and 1.4 times more per person reporting illness (p<0.05). Again median costs showed a smaller difference between the income groups; thus non-poor households often spent little or no more

than the poor on ambulatory health care, but could make higher expenditures if necessary.

Table 8 shows that some 80 per cent of ambulatory health care spending went on illnesses lasting more than seven days in both poor and non-poor households and that the spending differential between the poor and non-poor was the same for both shorter and longer illnesses. The not unexpected finding that households spend more money on more severe illnesses was observed also in rural Indonesia (Berman *et al*. 1987).

Of the total ambulatory health care expenditure, an average of 33 per cent was spent on OTC drugs, 25 per cent on commune public consultations, 23 per cent on commune private consultations, 16 per cent on hospital consultations and 4 per cent on home remedies (table 9). The relative expense of private and hospital consultations, and the relative cheapness of home remedies (table 6), explains the difference between these percentages and those showing the frequency of use of the different health care options (table 4).

Non-poor households spent more per person than poor households on all the options except home remedies, significantly so in the case of OTC drugs ($p<0.05$) and commune public consultations ($p<0.05$). The differential in non-poor/poor ambulatory spending was greatest for hospital consultations, but because of wide confidence intervals the difference between the averages does not achieve statistical significance. Despite the non-poor/poor spending differentials on the individual options, the distribution of annual expenditure across the different options was broadly similar for the two income groups; poor households devoted a somewhat higher proportion of spending on home remedies and private practitioners, and non-poor households devoted a somewhat higher proportion of spending on hospital outpatient treatment.

Hospital inpatient care

Hospital admissions are very expensive events but are relatively rare. For the whole sample, inpatient treatment cost an annual average of 13 900 dong per person or 38 000 dong per person reporting illness, adding half as much again to ambulatory health care expenditure (table 9). Non-poor households spent around four times as much annually per person or per person reporting illness on inpatient treatment as poor households ($p<0.05$ in both cases), a much greater differential than with ambulatory care: the poor often cannot afford to accept hospital admission.

Table 8. Annual expenditure on ambulatory health care by duration of illness and household income group (dong '000)

Income group	Duration		
	1-7 days	> 7 days	Total
Poor			
• number of episodes	343	467	810
• mean/person/year (95% confidence interval)	4.4[1] (3.6-5.2)	18.4[2] (15.4-21.4)	22.7[3] (19.7-25.7)
• mean/ill person/year (95% confidence interval)	12.6 (10.4-14.8)	52.9 (45.1-60.7)	65.6[4] (57.8-73.4)
• median/ill person/year	0.0	15.8	31.5
Non-poor			
• number of episodes	156	201	357
• mean/person/year (95% confidence interval)	7.2[1] (5.4-9.0)	30.1[2] (20.9-39.3)	37.9[3] (28.7-47.1)
• mean/ill person/year (95% confidence interval)	17.3 (12.9-21.7)	74.3 (53.3-76.4)	91.6[4] (70.6-112.6)
• median/ill person/year	0.0	15.8	37.8
Total			
• number of episodes	499	668	1167
• mean/person/year (95% confidence interval)	5.1 (4.3-5.9)	21.7 (18.5-24.9)	26.9 (23.5-30.3)
• mean/ill person/year (95% confidence interval)	14.0 (12.0-16.0)	59.5 (51.1-67.9)	73.6 (65.2-82.0)
• median/ill person/year	0.0	15.8	31.5

1. Significantly different ($p<0.01$).
2. Significantly different ($p<0.05$).
3. Significantly different ($p<0.01$).
4. Significantly different ($p<0.05$).

Table 9. Annual health care expenditure by type of health care act and household income group (dong '000)

Income group	Home remedies	Over the counter drugs	Consultation			Total ambulatory health care	State hospital admission	Total health care
			Commune public	Commune private	State hospital			
Poor								
• number of acts	285	468	281	140	55	1229	22	1251
• mean/person/year	1.1	7.6[1]	5.4[2]	5.8	2.8	22.7[3]	7.1[5]	29.8[7]
(95% confidence interval)	(0.7-1.5)	(6.2-9.0)	(4.2-6.6)	(4.0-7.6)	(1.4-4.2)	(19.7-25.7)	(1.9-12.2)	(23.8-35.8)
• mean/ill person/year	3.1	21.8	15.7	16.8	8.1	65.6[4]	20.4[6]	85.9[8]
(95% confidence interval)	(2.1-4.1)	(18.1-25.5)	(12.7-18.7)	(11.2-22.4)	(4.3-11.9)	(57.8-73.4)	(5.6-35.1)	(69.2-102.6)
• median/ill person/year	0.0	6.3	0.0	0.0	0.0	31.5	0.0	31.5
Non-poor								
• number of acts	151	197	143	64	41	596	14	610
• mean/person/year	0.9	12.0[1]	9.8[2]	7.3	7.9	37.9[3]	32.2[5]	70.1[7]
(95% confidence interval)	(0.3-1.5)	(8.2-15.8)	(6.0-13.6)	(4.1-10.5)	(2.1-13.7)	(28.7-47.1)	(8.9-55.6)	(43.6-96.8)
• mean/ill person/year	2.3	29.0	23.7	17.5	19.1	91.6[4]	77.8[6]	169.4[8]
(95% confidence interval)	(1.1-3.5)	(20.0-38.0)	(14.5-32.9)	(9.9-25.1)	(4.9-33.3)	(70.6-112.6)	(21.8-133.8)	(106.8-231.9)
• median/ill person/year	0.0	6.3	0.0	0.0	0.0	37.8	0.0	37.9
Total								
• number of acts	436	665	424	204	96	1825	36	1861
• mean/person/year	1.1	8.8	6.6	6.2	4.2	26.9	13.9	40.7
(95% confidence interval)	(0.7-1.5)	(7.4-10.2)	(5.2-8.0)	(4.6-7.8)	(2.4-6.0)	(23.5-30.3)	(6.5-21.2)	(32.3-49.2)
• mean/ill person/year	2.9	24.0	18.0	17.0	11.5	73.6	38.0	111.5
(95% confidence interval)	(2.1-3.7)	(20.2-27.8)	(14.4-21.6)	(12.4-21.6)	(6.3-16.7)	(65.2-82.0)	(17.9-58.0)	(89.0-134.0)
• median/ill person/year	0.0	6.3	0.0	0.0	0.0	31.5	0.0	31.5

1. Significantly different (p<0.05). 3. Significantly different (p<0.01). 5. Significantly different (p<0.05). 7. Significantly different (p<0.01).
2. Significantly different (p<0.05). 4. Significantly different (p<0.05). 6. Significantly different (p<0.05). 8. Significantly different (p<0.01).

Ambulatory versus inpatient care and hospital versus local care

While hospital admissions cost non-poor households nearly as much as ambulatory care over the course of a year, for poor households inpatient treatment added only about a third as much again to their expenditure on ambulatory care. Put another way, while for the whole sample hospital admissions were responsible for a third of total household health care spending, they accounted for nearly a half of spending of non-poor households, but less than a quarter of spending of poor households.

The predominance of expenditure on ambulatory health care over that on inpatient treatment can be seen also in poor rural counties of China; in the study by Yu *et al*. (1997) 84 per cent of total health care spending by poor households was for ambulatory care (derived from tables 2, 4, 6 and 7). The high unit costs of hospital admission can divert attention from the greater cumulative expense of relatively low cost, but more frequent, acts of ambulatory health care.

However, the relative spending on health care acts of high or low unit cost will vary according to the availability and quality of the different health care options in an area. For example, in our study the poor made considerably less use of expensive hospital treatment - outpatient or inpatient - than the non-poor and relied mainly on commune level ambulatory care. Two thirds of total health care spending by poor households was on relatively inexpensive local treatment. By contrast, in rural Sierra Leone nearly two thirds of curative care expenditure by poorer households was found to be on high cost hospital or private practitioner treatment (Fabricant *et al*. 1999). Nevertheless, it is important not to underestimate the cumulative burden that less dramatic and visible ambulatory care spending can have on poor households, especially when it comes to formulating policy on exemption from health care charges.

Total health care

The average annual expenditure of households on both ambulatory and inpatient care for the whole sample was 40 700 dong per person or 111 500 dong per person reporting illness (table 9). The annual spending per person was less than the average of 76 800 dong found for rural areas by the 1992-93 VLSS, although it is close to the 42 400 dong found for region 1 which includes Quang Ninh (SPC and GSO 1994: table 3.9.2). Our figure for people reporting illness is also close to the average of 98 100 dong found for rural people reporting health expenditure in the VLSS (SPC and GSO 1994: table 3.9.1).

While nationally nearly 60 per cent of household health spending in 1993 took place in the private sector (World Bank 1995: annex 4.3, table 12), in our study 60 per cent of total household health spending took place with the public (commune plus hospital) services. Only 15 per cent was spent on private consultations, compared with 26 per cent in the national estimate, and 48 per cent spent on

private health care providers in rural Indonesia (Berman *et al*. 1987: derived from table 2). As discussed already, these differences probably reflect the rehabilitation of the CHS services in our study communes and the lesser development of the private medical sector in the communes and - compared to developing countries with longstanding market economies - in Vietnam as a whole.

Table 9 shows that in our study total health care spending by non-poor households was per person 2.4 times that of poor households and per person reporting illness 2.0 times that of poor households ($p<0.01$ in both cases). The average annual spending of 29 800 dong per person by poor households is very close to the figure of 29 450 dong found for the lowest rural expenditure quintile in the VLSS, which also showed increasing spending with rising income (SPC and GSO 1994: table 3.9.2). As mentioned, two thirds of the total health care spending by poor households in our study was on relatively inexpensive ambulatory treatment at the commune level.

Our poor household group had a similar average income per person as the lowest income quintile in the health care survey of Ensor and Pham (1996) carried out in rural districts in the north of Vietnam. The absolute expenditure level of the poor was higher in the Ensor and Pham study, probably because of the much greater use of hospitals by the sample population (part of the study took place quite near to Hanoi). But the differential in health care spending between the poorest households and the rest is almost identical to that between the poor and non-poor household groups in our study. Differentials of health expenditure between high and low household income groups of 1.3-1.4 times have been reported from situations as diverse as poor rural counties in China (Yu *et al*. 1997: derived from tables 2, 4, 6 and 7) and rural districts of Sierra Leone (Fabricant *et al*. 1999).

Although poor households consult with health care providers less often (table 5) and spend less money on health care (table 9) than non-poor households, the burden of their health care expenses is much greater for them. This can be seen from the proportion of household income that is devoted to health care.

Expenditure as proportion of household income

The affordability of health care spending, and the degree to which financial barriers are likely to be limiting access to health care, are indicated in the proportion of household income that is devoted to health care. Table 10 shows this proportion for all households and those reporting illness, for poor and non-poor households, and for expenditure on ambulatory health care only and on all health care.

Whole sample

Considering first all households, the average proportion of household income expended on health care was 10.0 per cent for ambulatory care only and 13.2 per cent for all health care. As to be expected, median proportions were lower at 2.6 per cent and 2.8 per cent respectively. Ensor and Pham (1996) found a district range for average total health care spending as a proportion of household income of 3.3-10.0 per cent in other rural districts in the north of Vietnam.

Table 10. Household health care expenditure as percentage of household income by household income group

Income group	Ambulatory health care expenditure		Total health care expenditure	
	All households	Households reporting illness	All households	Households reporting illness
Poor				
• number of households	438	335	438	335
• mean (95% confidence interval)	13.4 (10.8-16.0)	17.4 (14.2-20.6)	16.8 (12.6-21.0)	21.9 (16.7-27.1)
• median	4.7	9.0	5.3	10.0
Non-poor				
• number of households	218	158	218	158
• mean (95% confidence interval)	3.2 (2.4-4.0)	4.5 (3.3-5.7)	5.6 (2.8-8.4)	8.2 (4.4-12.0)
• median	1.1	2.5	1.3	2.7
Total				
• number of households	656	493	656	493
• mean (95% confidence interval)	10.0 (8.2-11.8)	13.3 (11.1-15.50)	13.2 (10.2-16.2)	17.5 (13.7-21.3)
• median	2.6	5.0	2.8	6.3

Note. Mean percentages of poor and non-poor households significantly different in all four cases ($p<0.01$).

It is more common to find health care expenditure in Vietnam expressed as a proportion of income with the individual, rather than the household, as the unit of analysis. Ensor and Pham (1996) found an average proportion on a per person basis of 7.1 per cent in their sample, identical to our finding of 7.1 per cent calculated on the same basis (not shown in the table). Similarly, the 1992-93

VLSS found health spending to be on average 7.0 per cent of consumption expenditure in rural areas (SPC and GSO 1994: table 6.7.2).

Spending on health care relative to income appears to be high in Vietnam by the standards of some other poor countries. In China in 1987 the average burden of health costs was 2.7 per cent of farm incomes (Yu 1992: 53) and findings of average health expenditures of 2-7 per cent of incomes have been found in studies carried out in the 1980s and 1990s in Bangladesh, India, Gambia, Sierra Leone, Kenya, Uganda and Burkina Faso (Fabricant *et al*. 1999; Russel 1996; Sauerborn, Nougtara and Latimer 1994).

Analysis of all households includes the zero expenditure of those without illness episodes. For households reporting illness the percentages will obviously be higher: for these households in our study (table 10), spending on ambulatory health care averaged 13.3 per cent of income (median 5.0 per cent) and on all health care 17.5 per cent of income (median 6.3 per cent).

Poor versus non-poor

In our study the difference between the burden of health costs on poor and non-poor households was very great. Considering first all households in the income groups, for the poor health care expenditure averaged 13.4 per cent of income for ambulatory care and 16.8 per cent of income for all care, compared with 3.2 per cent and 5.6 per cent for non-poor households respectively (table 10).

Ensor and Pham (1996) similarly found total health expenditure to comprise 19.4 per cent of income in their lowest income quintile with a fall off to 3.9 per cent in the highest income quintile. By contrast and surprisingly, the VLSS found very little difference across consumption expenditure quintiles in the proportion of spending devoted to health care: 5.4 per cent in the poorest quintile compared with 5.7 per cent in the richest quintile (SPC and GSO 1994: table 6.7.1).

In China in 1987 a rising percentage of household income devoted to health costs was seen with falling county *per capita* income (Yu 1992: table 38) and in poor rural counties in 1993-94 a percentage rise was seen with falling household net incomes per person (Yu *et al*. 1997: derived from income data and tables 2, 4, 6 and 7). Higher percentage health spending by lower than higher income groups of 1.4-10.5 times have been found in studies in Bangladesh, India, Nepal, Thailand, Azerbaijan, Egypt, Gambia and Sierra Leone (Fabricant *et al*. 1999).

The expenditure by poor households of very high proportions of their income on health has also been described in many settings. In Phnom Penh, Cambodia, the poor are reported to spend almost 28 per cent of their income on health care (Wilkinson 1999). Average health care spending of over 20 per cent of household income or expenditure has been found for the lowest income groups in situations as diverse as Kuba district of Azerbaijan (Guseynova *et al*. 1996), a city in

northern Thailand (Pannarunothai and Mills 1997) and poor rural districts of Sierra Leone (Fabricant *et al*. 1999).

For poor households actually experiencing illness, the situation will be more serious than income group averages convey. For the poor households reporting illness in our study, spending on ambulatory health care averaged 17.4 per cent of income and on total health care 21.9 per cent of income, while for non-poor households the proportions were 4.5 per cent and 8.2 per cent respectively.

The differences between the mean percentages of poor and non-poor households in our study were highly significant statistically in all cases ($p<0.01$). Depending on the particular comparison being made, the percentage spending on health care was 2.7-4.2 higher in poor than non-poor households. These differentials were greater than for any of the other indicators of health care seeking that we investigated in this study. Even the median percentages were 3.6-4.3 times higher in poor than non-poor households.

These findings indicate that, although the poor did restrain their health care seeking relative to the non-poor, they did not do so in proportion to income. One of the objectives of our research was to assess the affordability of health care to poor households on two criteria: whether cost requires the poor to reduce their utilisation of health care and/or whether, by incurring health care expenditures, they inflict damage on their household economy and welfare. In our study communes, while health care was unaffordable to the poor on both criteria, the second problem was evidently greater than the first. This is probably the case in most of Vietnam.

This relative inelasticity of health care demand by the poor, especially for ambulatory care, has been noted elsewhere in rural Vietnam (Ensor and Pham 1996), in rural China (Yu *et al*. 1997), in rural Sierra Leone (Fabricant *et al*. 1999) and in other developing countries (Russell 1996).

Willingness and ability to pay for health care

We have seen that, compared with the non-poor, the poor made more limited use of formal health care, especially expensive hospital services, and incurred less health care expense, especially at lean periods of the year. But the ratios of health spending to household income show that the poor stretched their available resources further to obtain health care and put their household economies under corresponding strain. This strain could be even greater in poorer parts of the country.

We have described the socioeconomic conditions of poor and non-poor households in our study communes elsewhere (Segall *et al*. 1999). On average, poor households were bigger and family heads had lower levels of education. Most government workers were in non-poor households. The economy of poor

households depended mainly on farming, with little development of sideline occupations, in contrast to the much more diversified economies of the non-poor. The land farmed by non-poor households was more productive, mainly by virtue of their ability to invest in irrigation, fertilisers and pesticides. The poor were much more likely to run short of rice to eat at some time during the year and they ate a less varied diet. Their economies were at best finely balanced and a small adverse event could destabilise their households for long periods of time.

Debt was pervasive among poor households (Segall *et al*. 1999). These households tended to have multiple debts, which burdened them - both materially and psychologically - for long periods of time and trapped them in poverty. In extreme cases, total debt could amount to as much as the annual income of poor households. Loans would be taken for basic consumption purposes like the purchase of food or the payment of school or health care fees, or might be needed to pay commune taxes. By contrast, non-poor households were more likely to borrow to buy productive inputs and had less difficulty repaying loans. The non-poor were far more likely to be able to save during the course of a year. The poor, on the other hand, were much more vulnerable to economic shocks like floods, storm damage, loss of sideline work, or serious illness in the household. Family sickness is a common cause of debt and poverty in Vietnam, especially when illness or death strikes a breadwinner or requires households to use expensive hospital services (Ministry of Planning and Investment 1996; Ensor and Pham 1996; World Bank 1999). Illness and related costs have been found to have similar damaging effects on the poor in China (Zhang 1991) and elsewhere in low income countries (Chambers 1983; Gilson 1988; Russell 1996).

It is clear from our findings that hospital admissions are very expensive events, even for the non-poor, and households fear them for this reason. However, in focus groups the non-poor reported that they could usually raise the necessary money without too much difficulty, if necessary by selling assets or taking out a loan. By contrast, the poor reported that a hospital admission was likely to constitute a catastrophic economic event for them. They would have seriously to reduce essential consumption, disinvest and/or borrow money. Hospitals usually demand a sizeable deposit (like 100 000 dong) before admitting patients and poor families could have difficulty raising loans at short notice just to pay the deposit. It is not surprising that the poor often delayed or forewent inpatient treatment if at all possible and they were often forced to abscond from hospital without paying all or some of the fees. This was a source of great shame for poor households.

We saw in table 9 that, although a hospital admission overshadowed any act of ambulatory care for cost, over the course of a year average spending on ambulatory care exceeded that on inpatient treatment, most notably in the case of poor households. The bulk of ambulatory care spending took place at the commune level, again most notably for the poor, who consulted much less with expensive hospital services.

The non-poor met health care costs at the commune level without difficulty, in most cases out of ready cash. This was far from the situation, however, of poor households. These households minimised and delayed health care seeking, especially at lean times of the year. When the poor did seek help, they had to defer payment in about half of cases - the poorest in virtually every case. It was much easier for them to arrange delayed payment in the private sector than at CHSs and this is one reason why the poor consulted private practitioners relatively often, even though they had to pay more in the end.

To meet health care costs, even at the commune level, poor households might have to reduce essential consumption, notably of food, and regularly had to sell assets (like rice reserves or livestock) or borrow money (from relatives or friends, the Bank of the Poor, or occasionally private money lenders at high rates of interest). Not only did the poor sustain these opportunity costs of direct health care expenditure, at the same time they could be suffering the opportunity costs of lost labour of both the ill person and their carers.

A similar pattern of coping with illness and related costs by poor households has been described in other provinces of Vietnam (Ensor and Pham 1996; World Bank 1999), in the transitional economies of Cambodia (Wilkinson 1999) and Azerbaijan (Guseynova *et al*. 1996), as well as in countries of Africa and Asia (Russel, 1996).

We looked at the situation of those in our sample for whom health care spending was most burdensome and investigated the 29 households for whom this expenditure exceeded 50 per cent of household income. Such a high ratio might come about because health care spending was particularly high, income was particularly low, or both. We found that it was generally a combination of both factors. Almost all the households in this high ratio group were in the poor income category and they were evidently among the poorest: their average income per person was about a half of that of poor households as a whole. It is important to note that their high health care spending was not a result of inpatient treatment - almost all of it was on ambulatory care. Their average ambulatory care expenditure per person was nearly five times that of the poor households as a whole and around four times that of the whole household sample. How did this come about? The households described three common scenarios which could occur singly or in combination: a number of illness episodes occurred in a family, most likely acute (respiratory) infections in different people or recurrent episodes in a person with chronic illness (like asthma); episodes did not respond to initial treatment and came to involve a large number of health care acts; and/or expensive health care acts were needed, especially (though not exclusively) hospital outpatient consultations.

These high ratio households illustrate vividly the plight of poor households facing family illness. The poor are prepared to make great sacrifices to obtain the health care they see to be necessary, despite the negative economic and welfare consequences of doing so. Illness can force them to reduce essential

consumption, withdraw children from school and send them out to work. It can threaten the sustainability of their livelihood and start a process of depletion of reserves, possessions and productive assets (including livestock and land) that results in impoverishment and in turn further illness. Poor households lack economic reserves and suffer opportunity costs of illness not sustained by the non-poor, who can usually dip into reserves or cut back on discretionary consumption. Thus the fact that the poor incur health care expenditures does not mean they can afford them in the same sense as the non-poor.

What ratio of health care expenditure to income is 'affordable'? Ratios of 1-2 per cent (World Bank 1987) or up to 5 per cent (Russell 1996) have been proposed for developing countries based on average levels found in household surveys. The ratios recorded for poor households in our study, as well as those found in other studies quoted above, far exceed these affordability benchmarks. What is clear is that expenditures resulting in lasting adverse effects on households cannot be considered 'affordable', even though households actually incur them. Our findings give powerful support to the contention that the 'willingness' of the poor to pay for health care cannot be taken to mean that they are 'able' to pay in terms of their household economy, welfare and future health (Gilson 1988; Russell 1996).

Fee exemption policy for the poor

Movement of incomes 1991-1997

Focus group discussions revealed that, in the years following our baseline research, living standards rose for most households in the study communes, although much more clearly in the case of the non-poor. This perception is borne out by CPC data, which showed that average incomes per person of farming households more than doubled in real terms between 1991 and 1996 (Segall *et al.* 1999: table 4). The majority of households we categorised as poor in 1992 had evidently lifted themselves out of that category by 1996. Thus, while poor households comprised 67 per cent of our household sample in 1992, they were only 16 per cent of commune households according to CPC data in 1996 (Segall *et al*. 1999: table 5). Although these percentage figures are derived from different data sources and are based on only broadly similar criteria, the size of the difference suggests that they reflect a real change in household income composition of the communes. This in turn reflects a national trend of reduction in the prevalence of poverty since economic reform (Tran 1996: 235; World Bank 1999).

Households that remained in the poor category over these years appear also to have benefited from the economic reforms, however. According to CPC data, the incomes per family member of these households in 1996 averaged only slightly less in real terms than the average incomes of *all* farming households in 1991, which probably indicates a secular improvement in the situation of the poor (Segall *et al*. 1999: table 4). This is corroborated if we again mix the data sources and

compare the incomes of poor households in 1992 (study data) with those in 1996 (CPC data). Despite the fact that households remaining in the poor category in 1996 will likely have been the poorer ones within the poor category in 1992, in real terms average income per family member of poor households in 1996 was 1.7 times that in 1992.

An improvement in the living standards of the poor appears to have been the general trend in the country (Tran 1996: 235). The problem of poverty developing with the economic reforms in Vietnam is evidently mainly one of relative, rather than absolute, poverty (Glewwe and Litvack 1998) However, this does not exclude the fact that some unfortunate households have become absolutely poorer, especially with unemployment in urban areas (World Bank 1999).

Despite the general trend of rising incomes and the relative fall in medicine prices, poor households in our study reported in 1997 that the purchase of drugs and other basic necessities still often entailed their going into debt. Indeed, they felt that their improved living standards were due in no small measure to the fact that loans were easier to secure than in the past.

Exemption policy and practice

Rural households pay 'nationally mandated' taxes on agricultural output and private trading, and for commune residence. In addition, communes levy local taxes ('contributions') dedicated to financing commune management, infrastructure and services. The local taxes are mostly levied at a flat rate (variously per household, per person, per working person, per school child, or per land area held) and the local tax system is regressive. In our study communes in 1996, local taxes amounted to an average of 1.9 per cent of the income of non-poor households, but 5.8 per cent of the income of poor households (Segall *et al*. 1999).

The government has identified certain categories of people who qualify for social assistance, which may include exemption from paying taxes or fees at public facilities. Exemption can be in whole or in part and apply to the individual or the whole household. Groups eligible for social assistance include revolutionary heroes, war invalids, families of those killed in war, orphans, the lone elderly and the disabled. In addition, other people (including the very poor and those who have suffered a natural disaster like crop loss) may merit consideration for social assistance and exemptions (or at least payment deferral) on a case by case basis. It appears, however, that social assistance is not well targeted at the most vulnerable people (World Bank 1995: para 4.60). In practice exemptions appear to be relatively uncommon, especially at the commune level, and official safety nets are clearly not a major help in times of family crisis. In our study communes exemptions from paying taxes and contributions appeared to be very rare and only one person in our focus groups of poor households had been exempted from a commune tax.

Public health care fees: exemption and insurance

A commune private practitioner summed up the situation in 1996 as follows: *"I see some serious cases, but people are too poor to go to the commune health station and buy drugs....About 10 years ago the government paid all the costs for people. We were all living at the same level and so poor patients had good care. But now, in this economic climate, it is divided very clearly into poor and rich people. The poor cannot afford to look after themselves and there are no funds from the government to do so."*

Exemption from the payment of some or all fees in the public health system should ensure that the poor have adequate access to essential health services and do not suffer adverse economic or welfare consequences of health care expenditure. This is often of particular importance for the elderly poor. Although targeting of safety nets is far from perfect in Vietnam and needs to be improved, the communes are by and large successful in identifying poor households. This puts Vietnam in a better position than many countries to implement an effective fee exemption policy. The CPCs would be well able to administer such a policy.

Some categories of people have been automatically exempt in principle from public health charges. Children under the age of five years are an eligible category. State employees and their families were also eligible for exemption from charges in government hospitals and polyclinics. However, this exemption fell away in 1993 when the government introduced compulsory insurance of state employees and workers in state or private enterprises for the costs of public health care (Ensor 1995). Members register with state health facilities and in principle the insurance covers the cost of inpatient and outpatient treatment of most conditions, although in practice insured patients often face some charges. This compulsory scheme, when fully implemented, will cover however only around 10 per cent of the population.

The health insurance scheme also provides for voluntary membership, but the uptake of voluntary insurance has been low in Vietnam and this was certainly the case in our study communes. Unlike in the case of compulsory health insurance, the voluntary scheme does provide for the insured to register with a CHS and be covered for official fees in public health facilities at all levels, including in the commune. However, this inclusion of CHS care in voluntary insurance has only been implemented in some areas and had not been introduced to Quang Ninh at the time of our research. In fact our focus groups revealed very little, if any, interest in the voluntary health insurance scheme. Among the reasons given were: the need for hospital treatment is rare; the insurance premium is high; patients with health insurance still face charges; and the cover would not help households meet the considerable non-fee costs of care. There is no tradition in Vietnam of local pre-payments schemes for health care, like the cooperative medical schemes

in China (Tang *et al*. 1994), and we found little or no interest among either households or political authorities in initiating this form of risk sharing.

With respect to the poor, the categories of people who qualify for social assistance may be eligible for exemption (in whole or in part) from paying health care fees. However, as with the social assistance programme in general, exemption from health care charges is not well targeted at the needy (Nguyen, Le Thi, Rifkin and Wright 1995), for whom it seems to be relatively rare. The poor may indeed not know that they can be eligible for exemption. In our study only one household in the focus groups had received officially exempted health care on the grounds of poverty and then only partial exemption. On the other hand, subsidised health insurance cards were given to members of CPCs or commune people's councils. Facilities may informally reduce charges to poorer patients, but this is much more common for service items than for drugs, which are the main cost component. Ineffective, poorly targeted or non-existent systems for health fee exemption are common in developing countries (Russell and Gilson 1997).

The *National Programme for Hunger Eradication and Poverty Reduction in Viet Nam*, launched in 1996, provides for the subsidisation of hospital costs of the poor (Ministry of Planning and Investment 1996). The most common mechanism used by provinces, including Quang Ninh, is the issuing of health insurance cards to the poor. However, important though this measure is in principle, in practice the system has many drawbacks. For example, many of the poor are unaware of the scheme, the application procedure is long and complex, the needy do not always qualify, and the system suffers from weaknesses originating in the compulsory insurance scheme on which it piggybacks (Segall *et al*. 1999). These weaknesses include the fact that the insurance subsidy covers only some of the costs that households face and that treatment can only be obtained from one facility, normally the local district hospital. It is not surprising, therefore, that the poor may still lack access to hospital treatment despite the existence of poverty alleviation funds. Some provinces, instead of issuing health insurance cards, provide the poor with free treatment cards, which have the advantages that more of the treatment costs are subsidised and the cards can be used at any government facility, but still only at the hospital level.

The important thing, however, is that the government has accepted the need to subsidise hospital care for the poor. With better design, management and targeting, and if necessary the allocation of more poverty alleviation funds to health care, the hospital subsidisation scheme could be made to work.

The same cannot be said for meeting the costs of commune health care, which are currently much the greater problem for the poor. The dramatic costs of a hospital admission are there for all to see, but the more common problem of the 'drip-drip' costs of less expensive, but more frequent, acts of local ambulatory care has escaped the attention of the political authorities.

There is in fact no clear exemption policy for the health care costs of poor households at the commune level. There is rather a discretionary - and quite rare - waiving of CHS fees by CPCs on a case by case basis. Sometimes the CHS head may informally allow deferral of payment, but only for a short time. Yet poor households regularly disinvest and/or go into debt to pay for commune health care. In addition, any attempt by households to minimise costs by avoiding or delaying primary care treatment can be detrimental to the health of the patient and result in the need for hospital care. This is bad for the economy of households and bad for the economy of the health service. It is also bad health service economics to provide subsidised treatment in hospitals, but charge for care at the primary level. This gives poor households the incentive to bypass CHS services and press for hospital care at subsidised prices.

Exemption from CHS charges for essential drugs: a costed proposal

Drugs are the main health care cost of households in the communes. As a contribution to formulating a policy for subsidising the health care expenses of the poor at the commune level, we have estimated a benchmark cost of providing subsidised CHS essential drugs to poor households in our study communes. Such a policy has become financially feasible in recent years as a result of the reduction in the number of poor households.

The pattern of prescribing in CHSs is not ideal and the study CHS workers tend to overmedicate, including with non-essential drugs; at the time of our research they prescribed an average of 2.4 drug items per consultation (Tipping *et al*. 1994: tables 3 and 18). Some of the common conditions arising in the study communes (Tipping *et al*. 1994: table 16) call only for a simple and cheap symptomatic remedy, while for others one or sometimes two specific essential drug items are indicated. We have therefore not used the average household expense of a commune public consultation as a basis for our calculation. In making our cost estimate we have assumed a subsidisation of CHS drugs at an average rate of one pharmacologically active essential medicine per consultation. The average cost of a treatment course with one of the six essential drugs prescribed most commonly by the study CHSs in 1996 was 4 400 dong (Segall *et al*. 1999: table 4). Using average rates of CHS consultation, we have calculated that the total annual cost in 1996 of an exemption policy of this kind would average just under 2 million dong per study commune (Segall *et al*. 1999: table 5). This figure represented 5.5 per cent of average CHS recurrent expenditure or 14.5 per cent of the public subsidy of CHS recurrent expenditure.

The creation of a drug subsidy might encourage more poor households to attend CHSs rather than take up private health care options and this would increase the public cost of the exemption policy. While the cost must obviously be kept under review, this effect would be beneficial from the public health standpoint. The CHSs are the vehicle for the delivery of integrated (curative and preventive) primary health care services; more patients would increase the efficiency with which public

sector investments in CHSs are used; and quality of care is arguably more readily improved and monitored in the public than the private sector. These factors would make a shift of patients back to CHSs advantageous in terms of both health outcomes and health service efficiency.

The public cost of such an exemption policy would not be trivial, but neither would it be infeasible. There are four candidate sources of finance for the drug subsidy, which could be used singly or in combination: the government poverty alleviation programme (which would entail a change in programme guidelines to allow support for CHS costs); CPC general revenue (given the decline in CPC contribution to commune health care in recent years); a dedicated commune health tax or 'contribution' (which would add less than 1 per cent to the average local tax revenue collected in the study communes; since this tax would subsidise the poor, it would go towards redressing the regressive character of the commune tax system); and the provincial health budget.

It is sad to reflect that the poor often place their household economy under strain to pay for more, and more expensive, drugs than they need medically and which may subject them unnecessarily to adverse effects. The pattern of drug use with the other main ambulatory health care options was similar to that seen in the study CHSs (Tipping *et al*. 1994: table 18). Polypharmacy is a worldwide problem, that has been documented also in other Asian transitional economies (Stenson, Tomson and Syhakhang 1997; Zhan, Tang and Guo 1997). The creation of a subsidy to cover the cost of certain key essential drugs only, to be used in accordance with official therapeutic guidelines, would promote CHS compliance with the Ministry of Health essential drugs policy and should result in better prescribing practices. These would be reinforced by refresher training and effective clinical supervision by the district health centre.

The subsidy system would also promote a more restricted pattern of drug consumption by households and this should be reinforced by a public education programme on the better use of medicines. Home remedies are cheap, familiar and inoffensive, and should be promoted for minor disorders. Over time, this combination of measures would help to reduce unnecessary drug use and expenditure, notably by poor households.

No official decision has yet been made on this exemption proposal.

Summary and conclusions

The economic reforms in Vietnam have made most people better off, but there is a significant minority for whom the benefits have been few and who have been left in poverty. These poor households are burdened by debt, often incurred to meet basic consumption needs. They are very vulnerable to economic shocks of all kinds including family illness.

Affordability of health care to the poor can be judged on two criteria: whether cost requires them to reduce their utilisation of health care and/or whether, by incurring health care expenditures, they inflict damage on their household economy and welfare.

Compared with the non-poor, poor households in our study used less formal health care, especially expensive hospital services, and incurred less health care expense, especially at lean times of the year. But the difference in these respects was much less than that in the ratio of their health care spending to household income. The poor stretched their resources much more to obtain health care and in the process put their household economies under great strain. They suffered the opportunity costs of both direct health care expenditures and the loss of labour of sick persons and their carers. Health care expenditures that result in lasting adverse effects on households cannot be considered 'affordable', even if households actually incur them. Our findings give powerful support to the contention that the *willingness* of households to pay for health care under the pressure of family illness cannot be taken to mean that they are *able* to pay in terms of household economy, welfare and future health. In Vietnam, of the two affordability criteria cited above, the second is evidently the greater problem.

Hospital treatment is expensive. In particular a hospital admission may be a serious economic event for any household, but it is likely to be a devastating occurrence for the poor. In our study, poor households forewent hospital treatment if they could but, if they could not, they seriously disinvested and/or went into debt to pay the costs. The government has recognised the need to subsidise hospital treatment for the poor and funds for this purpose are provided by the poverty alleviation programme. However, the design, management and targeting of the hospital subsidisation scheme require radical improvement.

The need for hospital treatment is relatively rare and in our study communes the bulk of health care spending by poor households was at the commune level. Drugs are the main household cost in the communes and the poor had great difficulty in paying for them. They often had to disinvest and/or go into debt to do so. The regular 'drip-drip' of spending on relatively inexpensive but frequent acts of local health care escapes political attention but is the main problem for poor households.

In addition, any attempt by households to minimise costs by avoiding or delaying primary care treatment can be detrimental to the health of the patient and may result in the need for hospital care. This is bad for the economy of households and bad for the economy of the health service. It is also bad health service economics to provide subsidised treatment in hospitals, but charge for care at the primary level. This gives poor households the incentive to bypass CHS services and press for hospital care at subsidised prices.

Exemption of the poor from charges for commune public services is rare and there is no clear official policy on this subject. We have calculated a benchmark cost of a policy of exempting poor households from paying for essential drug treatment at CHSs. The cost of this policy would add about 15 per cent to the public funding of CHS services and could be financed by the poverty alleviation programme, CPC general revenue, a commune health tax, and/or the provincial health budget.

The creation of a subsidy to cover the cost of certain key essential drugs only, to be used in accordance with official therapeutic guidelines, would promote CHS compliance with the Ministry of Health essential drugs policy and should result in better prescribing practices. The subsidy system, combined with a public education programme on the better use of medicines, would also promote a more restricted pattern of drug consumption by households and could help to reduce unnecessary drug expenditure, notably by poor households.

Safety nets are not well targeted in Vietnam, but the communes are quite successful in identifying poor households. This puts Vietnam in a better position than many countries to implement an effective policy of fee exemption for both hospital and primary level care.

DETERMINANTS OF HOUSEHOLD CHOICE OF AMBULATORY HEALTH CARE OPTION

Many factors are likely to influence the decision of households to adopt one or other health care option from among those that are available to them. These factors include the type and severity of illness, characteristics of the sick person, characteristics of the household, and characteristics of the provider of the option (table 1). The factors interact with each other in a complex way in the process of household decision making on health care choice.

In the previous section, in documenting the health care actions that households took, we were able to infer the influence that household income, duration of illness and cost of health care option had on health care seeking behaviour. In annex 1 we analyse the relations of some individual characteristics, namely, the educational level of the household head, and the age and sex of the sick person, to the choice of ambulatory health care option.

In this section we report on two other potential determinants of household decisions on ambulatory health care. We look briefly at the relation of type of illness to health care choice. We then discuss in detail the influence of provider characteristics as seen from the standpoint of households and how these characteristics interact with household income and illness severity in the decision making process.

Type of illness

It is possible that households select particular health care options according to the type of illness involved. The morbidity recorded in our study consisted almost entirely of common acute disorders. We grouped reported symptoms into six categories and analysed the choice of ambulatory health care option by symptom category; the findings have been reported in more detail elsewhere (Tipping *et al*. 1994: table 16).

There was a slight preference for the use of OTC drugs and commune public services for respiratory symptoms, of home remedies for headache and dizziness, and of private practitioners for non-specific aches and pains and skin disorders.

About a third of all health care acts involved traditional medicine, mostly in the form of home remedies. Only 9 per cent of acts involved the OTC purchase of finished herbal products or a consultation with a traditional medicine assistant doctor or herbalist; these acts were chosen particularly for aches and pains and skin disorders. Similar low utilisation rates of traditional medicine other than for home treatment were found in rural Indonesia (Berman *et al*. 1987) and rural Sierra Leone (Fabricant *et al*. 1999). Modern medicine was sought disproportionately for respiratory illnesses, possibly with a view to obtaining antibiotic treatment.

However, most of these differences were quite small and, for the common disorders observed in this study, the symptom pattern did not appear to be a major factor in choice of health care option. Similarly, no clear relation was found between household choice of health care provider and self-reported diagnosis in rural Indonesia (Berman *et al*. 1987).

Provider characteristics as seen by households: interaction with household income and illness severity

Elsewhere we have reviewed the general pattern and determinants of health care seeking behaviour in developing countries (Tipping and Segall 1995). In our research in Vietnam we found that, in common with experience in other countries, the main considerations taken into account by households in choosing among ambulatory health care options were cost, convenience and perceived quality of service. These factors interacted with each other, and with illness severity and household income, to result in final health care choices.

Cost and flexibility in the terms of payment

Not surprisingly cost is a major consideration for households in seeking health care. We have pointed out that the frequency with which households chose the main health care options was in inverse ranking to their average cost. That is, with increasing frequency, they chose OTC drug purchases and consultations respectively with commune public services, private practitioners and hospitals. Home remedies were by far the cheapest option, but were rarely used alone and

seemed to be looked on mainly as a complement to more formal acts of health care.

Drugs are the main health care cost for households. Focus group discussants found that drug prices were similar at all local outlets, whether public or private, and unit price was not a factor in the selection of type of health care. Drugs bought at hospital were sometimes more expensive than at the commune level and hospital prescriptions were sometimes filled locally to save money.

One advantage of OTC drug purchases is that households have better control over the amount of medicines bought. Having said this, on average there was not much difference in the number of drug items bought per different type of health care act: OTC purchase 2.0, CHS consultation 2.4, private consultation 1.8 and hospital consultation 1.8 (Tipping *et al*. 1994: table 18). Neither was there much difference in the average number of days of drug treatment with commune level options: OTC purchases seven, CHS consultations eight and private consultations nine. The average treatment duration with hospital consultations was longer at 12 days, probably as a result of the more serious case mix of patients attending hospital. Nevertheless, we did observe a number of excessively short courses of antibiotic treatment (with implications for the development of bacterial resistance) and most of these short courses resulted from OTC purchases. So it possible that in some instances, especially with more expensive drugs, households are able to limit their drug expenditure by avoiding a formal health care consultation and buying drugs directly.

Cost is not an absolute consideration by households in deciding on health care and they take into account other factors like severity of illness and current availability of resources. The inverse ranking relationship between frequency of use of option and cost applied to poor and non-poor households and shorter and longer illnesses. But within this broad relationship, with longer illnesses households relied less on OTC drugs and turned towards consultations with more expensive providers. This applied to both poor and non-poor households. Nevertheless, the ability of the poor to make this shift was constrained, especially at lean times of the year, and they reserved the recourse to expensive hospital services for only the most serious of illnesses.

For many poor households even the costs of local ambulatory care are a burden. However, often more important to them than actual cost - at least when they are in the midst of coping with acute illness - is the flexibility that providers show in the terms of their charges. We have mentioned that poor households often need to defer health care payments, but that it is quite difficult to arrange for deferral at CHSs and virtually impossible at hospitals. By contrast, it is much easier to negotiate delayed payment or even payment in kind in the private sector, be this for OTC drug purchases or a private consultation. Private practitioners were generally the most flexible health care provider in this respect and this is the main reason for the relatively high use made by poor households of private

consultations, despite these being generally the most expensive of the local health care options. With private practitioners the poor can stretch the period of payment, although they end up paying more for the privilege.

Convenience

Journey time to health care providers, and the difficulty and expense of travelling, are the most obvious aspects of convenience to households. In Vietnam, the physical availability of rural health care is generally good, at least in the plains, and is much better than in most developing countries. In our study communes most people travelled for health care on foot or by bicycle. Travel times were usually a quarter of an hour or less within the commune and location did not systematically favour one type of provider over another (Tipping *et al*. 1994: table 15). A drug outlet situated at a market place would be convenient for OTC purchases. Travel to a hospital or polyclinic typically took little more than half an hour, although could incur travel costs. Waiting times were short with all providers, even hospitals.

In this context of ready physical availability of health care, the main elements of convenience in the study communes were facility opening hours, the availability of care out of formal working hours, and the ease of obtaining home visits. The CHSs had official consultation hours (usually 0830-1600), but patients could arrive at CHSs during the formal opening time and still find nobody there. In principle, CHS workers received a night duty allowance for attending to emergencies, but the allowance was not always paid and the CHS workers were not always available.

For poor households in particular, the working day is totally consumed by the continual struggle for survival and they had little time to attend the CHS during official hours, especially as they could not be sure that a CHS worker would be in attendance. They needed health care to be available in the early morning before work or in the evening after work. Poor families often lack transport and, if the patient found it difficult to travel, they needed care in their homes. Health station staff would occasionally see patients out of hours, in their own homes or on visits to patients (sometimes in a semi-private capacity), but not often enough to respond to the needs of households. In our study, home consultations comprised only 6 per cent of the total household consultations conducted by CHS staff (Tipping *et al*. 1994). Thus the main weakness of the CHS service from the viewpoint of households, especially the poor, was the difficulty of obtaining care when it was needed.

This was another area where private sector providers scored over the public service. Retail drug outlets and private practitioners were much more available, especially out of working hours, and the practitioners were much more ready to make home visits (at a price). Such visits comprised 30 per cent of the private consultations in our study.

Perceived quality of service

From the technical standpoint, households mostly judged service quality on the perceived competence of the individual health worker rather than by the type of provider. The one exception to this was the case of hospitals, which were held to provide higher quality technical care than that available at the commune level.

Households also judged quality on the state of physical facilities and the presence and condition of medical equipment. In this respect, CHSs had the advantage over private practitioners and hospitals scored highest of all. The availability of drugs is the most common popular criterion of health care quality in developing countries (Tipping and Segall 1995), but was not a problem in Vietnam at the time of our research. More to the point was the supposed quality of drugs. With economic reform, many low quality, diluted or even fake drugs were on the market and households were suspicious about the quality of drugs sold privately, especially by small scale vendors. Public facilities, including CHSs, were felt to dispense or sell drugs of reliable quality.

All in all, households may be quite good judges of the technical quality of health care. It is interesting that the quality ranking of the four study CHSs by household respondents was the same as our own made on professionally defined criteria (Tipping *et al*. 1994).

We investigated one other aspect of perceived quality of technical care. It is possible that households take into account the type of treatment they expect to receive when they choose among health care providers. In ambulatory care, drugs are the main type of treatment dispensed. We grouped drugs into five main categories and analysed the frequency of their use in OTC purchases and health care consultations (Tipping *et al*. 1994: table 18). Antibiotics were used relatively frequently by CHSs; vitamins, tonics and analgesics by VHWs and in OTC drug purchases; and herbal medicines by private practitioners. However, most of the differences were quite small. As described above, neither was there much difference in the number of drug items bought with the different health care options. It is unlikely, therefore, that anticipated treatment would figure prominently in the household choice of health care option, except perhaps if traditional medicine was specifically sought.

Like all over the world, patients in Vietnam are not looking only for high quality technical health care. At least as important to our study respondents was the attitude of the health worker to the patient and his/her family. There is a saying in Vietnam that health workers should be like mothers. A caring, understanding and communicative attitude on the part of health workers was sought by families, who were ready to travel further and pay more to find it. Here again, perhaps for obvious reasons, private practitioners scored higher than the public health service. The staff of CHSs were judged on the merits of their individual attitudes, while hospital workers were generally held to be impersonal and rude.

Summary of pros and cons of ambulatory health care options

Home remedies were cheap, but they were rarely used alone and seemed to be employed mainly as a complement to formal health care options, especially by the non-poor in the case of shorter illnesses. They were also used more by households in which the head had a lower educational level (see annex 1).

Over the counter drug purchase was the most frequently used of the main health care options. Purchases were relatively cheap. The buyer could control how much medicine was purchased and could often negotiate a deferral of payment if necessary. Purchases of OTC drugs were convenient for households because retail outlets are often situated in markets or near other shops and are usually open outside formal working hours. The main disadvantages of this option were that OTC transactions lack a formal consultation with a health worker and, in some situations, households were doubtful about the quality of the drugs sold. This option was used especially by poor households and in the case of shorter illnesses.

Commune public services (delivered mostly by the CHS) were the option most frequently utilised by households, poor and non-poor, for a health care consultation. The CHS was the longest standing formal health care provider in the communes and was generally trusted. Other things being equal, many households preferred to attend the CHS: it had equipment, was believed to dispense reliable and safe drugs, could refer patients to hospital, and was the provider of preventive services. The CHS was relatively cheap and for some villages was located quite conveniently. Village health workers, where they continued to exist, were appreciated especially for milder illness, because they lived conveniently nearby and tended to dispense short courses of cheap drugs. However, some CHSs failed on important criteria such as health worker professional skill or attitude, and standard of facilities. Two disadvantages appeared to be built into the CHS services at the time of our research: the reluctance of CPCs to allow the deferral of fee payments and the reluctance of CHS workers to provide out of hours care or make home visits. Both these problems were more serious for poor households.

Private practitioners were on average about twice as expensive to consult as the CHS and were used about half as often. They also had the disadvantages, compared with the CHS, of lacking clinic facilities and equipment and the ability to refer patients to hospital. As in the case of OTC drug purchases, households sometimes doubted the quality of the drugs sold. But private practitioners had advantages precisely in areas of CHS weakness: they were always caring and understanding, they were happy to provide care out of hours and in patients' homes, and they were prepared to wait for payment or accept payment in kind. With respect to their availability, these practitioners plugged the gap left by the disappearance of most VHWs in the post-reform era. In the event of more serious illness, in which households sought a consultation rather than buy OTC drugs, households increased their use of private practitioners rather than of the CHS,

knowing that more expense would be incurred and they would need to delay payment. These advantages of private practitioners were particularly important for poor households, an observation also made elsewhere in Vietnam (World Bank 1999) and in developing countries generally (Tipping and Segall 1995). In our study the poor used private practitioners with virtually the same frequency as the non-poor, despite the extra expense.

Hospital outpatient services were by far the most expensive of the ambulatory health care options and were used with by far the least frequency. Hospitals were seen to have the advantages of superior professional skill and the availability of good facilities, equipment and drugs. The disadvantages of the hospital option were, apart from the absolute cost, the virtual impossibility of obtaining deferral of payment, the need to arrange transport, the need to manage referral procedures, and the negative attitudes of hospital workers. Apart from those people who were sure they qualified for fee exemption, hospital outpatient services were mainly used by households, even in the non-poor category, in the case of more serious illness.

Implications for policy on commune public and private health services

Need to improve quality and responsiveness of public primary health care

Despite the development of the private medical sector in Vietnam since economic reform, the CHSs remain the primary care provider of ultimate recourse and are the backbone of the government's strategy for delivering integrated primary health care services. In our study communes the CHSs were by and large popular structures and were the most frequently used provider of curative consultations.

Both the SIDA financed development project and the subsequent government financed capital investments improved the physical facilities and equipment stock of the CHSs. The taking over of CHS salaries by the state health system increased staff income and improved staff morale and performance. The CHS personnel received refresher training in primary health care and a system of district supervision of CHSs was instituted. In fact, the experiences of primary health care development and supervision in the study districts were one of the bases for the writing of a manual on primary health care management that was distributed to communes throughout the country (Centre for Human Resources in Health 1994). Doubtless it was a result of these various inputs that the rate of consultation with the study CHSs was double that found for rural areas in the 1992-93 VLSS.

It is important to note, however, that many CHSs in Vietnam have not benefited from a comparable process of rehabilitation and CHS care has still to be upgraded technically in many parts of the country. Provincial governments need therefore to allocate the necessary resources to CHSs to ensure that at least: facilities are renovated; a basic set of medical equipment is provided; the health workers are taken into state employment according to government policy and are given

refresher training in primary health care; and a system of supportive district supervision of CHSs is established.

We saw that, through the years of the mid 1990s, the technical quality of the services delivered by the study CHSs showed a general, if patchy, improvement and the mechanisms for further improvement exist. Yet the rate of CHS consultations per commune member showed no clear increase (Segall *et al*. 1999: table 2). Technical improvements are a necessary, but may not be a sufficient, condition for attracting commune patients.

This brings us to the problem of service responsiveness. In 1994 we reported to a Ministry of Health workshop our findings on the difficulty households had in accessing CHS care out of official working hours (sometimes even within official hours) and in obtaining home visits. In 1995 the Ministry issued a decree that reiterated the obligation of CHSs to provide a 24 hour service and reminded commune authorities that they had to pay CHS workers a night duty allowance. The decree also stipulated that CHS workers should each be allocated a number of households, usually in the village where the worker lives, and be responsible for providing them with home care as necessary.

In our intervention research, we attempted to facilitate the implementation of this ministry directive. We found considerable variation across the study communes in the availability of CHS workers during the day and night and in the provision of home visits by CHS staff. There were also many differences in the incentive allowances due - and actually paid - to CHS personnel for improving service responsiveness. Discussions at district and commune levels about this problem yielded few results. The CHS staff felt that they should be remunerated for the additional work entailed in making the service more user friendly, while the political authorities held that this was part of the basic responsibility of CHSs and no more money was due. There was even sometimes dispute over what structure was responsible for the payment of the official night duty allowance: the district health service or the CPC. Resource allocation thus appeared to be at the root of this problem.

We also tried to promote a system of accountability of the CHSs to service users, so that issues like the availability or conduct of CHS personnel could be discussed openly between staff and users in a constructive way. This idea of the open airing of difficulties unfortunately became conflated with complaints procedures and political criticism/self-criticism sessions, and was considered to be too politically sensitive to pursue at that time.

We thus made little or no progress in the area of service responsiveness. It appears that improvements in the technical quality of public health care, handled within the health system itself, are much easier to effect than change in the wider political environment, especially when this involves the allocation of new

resources. The need for improved public service responsiveness has not been sufficiently visible to political authorities to turn them into priorities for local action.

Parallel with these attempts to improve the face of the public health service to households, we facilitated an intervention to try to get the best of both public and private health care worlds.

A coordinated public/private mix of commune health care: private practitioners as post-reform 'village health workers'

Before the economic reforms many communes had a network of VHWs, who were mostly elementary nurses remunerated by the agricultural cooperatives. As outreach cadres, VHWs were an inexpensive means of providing rural people with convenient access to basic health care of a locally responsive kind. However, with the economic reforms cooperative production was lost and the VHW system collapsed in most communes. The Ministry of Health wants to see the resurrection of the VHW system to increase access of the poorer sections of the rural population to health care, especially in low density mountainous or highland areas. In the intervention research phase, we applied the VHW principle to the situation of our lowland study communes in the post-reform period.

Public sector reforms have resulted in a downsizing of public health services and a demobilisation of army medical personnel. This has led to the presence of a number of retired health personnel in communes, especially in the lowland areas. Many of these one-time public employees are now practising medicine privately and many of these - the sub-university level cadres - are doing so in an unlicensed capacity. Regulation of the private health care market has not kept up with the proliferation of private practitioners, whose work is virtually unmonitored and is of unknown quality and quantity.

Collaboration between the public and private health sectors is government policy in Vietnam. Private practitioners are thought to constitute an important human resource for the health sector: they have been formally trained, most of them for at least three years; many are experienced clinicians; many have brought a public service ethic into their private work; and their services are sought by the community. Public/private collaboration would have three main purposes: to support the public health service, to monitor the quality of private health care, and to compile private health sector statistics.

In some rural communes, especially in the south of the country, private practitioners have become the main providers of curative care, with CHSs narrowing their range of responsibilities into delivering mainly preventive services. This is collaboration by division of labour. But the system has the disadvantage of delinking curative from preventive primary health care and losing the synergisms that are possible with integrated health services. We took a different approach to public/private collaboration, that was appropriate to the more developed CHS

network of the north of the country. The CHSs would remain with their responsibility of delivering integrated primary health care, but would collaborate with private practitioners for both curative and preventive services.

In our study communes, most of the private practitioners were retired public health or army medical cadres who had been trained to not more than the secondary medical level. Their private work was therefore strictly against the law. A vice minister of health approved a form of licensing for them for the purposes of our pilot intervention. The licensing employed a legal framework similar to that for VHWs: like VHWs, the practitioners would be authorised for clinical practice under the supervision of the public health service. We thus piloted the possibility of the cadre of retired public service workers becoming post-reform 'village health workers' of a new type. Here we summarise the scheme that was developed by the district health centres after discussion with the private practitioners. More details have been given elsewhere (Segall *et al*. 1999).

Scheme design

The practitioners would be licensed to work privately and sell medicines, but only those items on the provincial essential drugs list for primary health care. Their fees would not be monitored directly and no formal price control mechanism would be instituted, but their charges would have to be "affordable by the poor". The practitioners would be regarded as members of the public health network. The health service would provide them with a refresher training course, health education materials and basic equipment. They would receive continuing information and advice from the district health centre via CHS staff and they would be eligible for continuing refresher training.

On their side, the practitioners would submit records of their clinical work, including time and place of consultations, age and sex of patients, presenting symptoms and treatments given. They would participate in CHS health promotion campaigns and preventive health programmes, notably on 'health days', for which they would donate 1-2 days of work a month. They would attend monthly meetings at the CHS to report on their work and receive information from the public health system.

Scheme implementation

Participation by the private practitioners was voluntary. Most - though not all - of them agreed to take part, mainly in order to achieve official status as licensed practitioners. Formal contracts were signed between the practitioners, district health centre directors and CHS heads. The contracts had a duration of one year, renewable on satisfactory fulfilment. The refresher training course was held and the practitioners were officially introduced to the CPCs and village heads in their new capacity. The scheme went into operation in August 1997.

We monitored the scheme over the first year of its operation. It generally worked well and reportedly satisfied all parties. The practitioners kept their patient records as required and attended the CHS monthly meetings. They participated in 'health days' and carried out other preventive work as requested by the CHSs.

At the end of the first year there were some unresolved issues. These included: the amount of preventive work that could be expected from the private practitioners without incentive payments; the need for the district health centres to honour their undertaking to provide the practitioners with basic equipment and continuing education; the need to ensure compliance of the private practitioners with the essential drugs list; and the need to increase the capacity of the district health centre to monitor and promote the quality of private (as well as public) clinical care.

The scheme has still to mature. But it succeeded in what it set out to do, namely, to establish a regulatory mechanism for the activities of commune private practitioners. It legitimised and stabilised the work of the practitioners, who can continue to deliver readily available and responsive care to households. It mobilised additional personnel for preventive and promotive health services. It allowed the volume and character of commune private health care to be monitored and established a framework by which private drug prescribing and charges can be regulated over time. The scheme is replicable in other parts of the country.

Summary and conclusions

In choosing among available options for ambulatory health care, households assess the characteristics of providers in relation to household income and severity of illness. The main provider characteristics taken into account are cost, convenience and perceived quality of service.

Cost is obviously a major consideration for households. In our study, the frequency with which households chose the main health care options was in inverse ranking to their average cost. This applied to poor and non-poor households and shorter and longer illnesses. With longer illnesses, households made proportionately less use of the cheaper option of OTC drugs and turned towards consultations with more expensive providers. The ability of the poor to make this shift was constrained, however, especially at lean times of the year. They reserved recourse to expensive hospital services for only the most serious of illnesses.

Often more important for poor households than actual cost is the preparedness of providers to wait for payment or accept payment in kind. This flexibility in payment terms was much more evident in the private than the public sector. This is the main reason for the relatively high use made by poor households of private practitioners, despite these being generally the most expensive of the local health care options.

In the context of the ready physical availability of health care in the rural lowlands of Vietnam, the main elements of ***convenience*** of providers are facility opening hours, the availability of health care out of formal working hours, and the ease of obtaining home visits. For poor households, the working day is consumed by the struggle for survival. They need CHSs to be open when they should be and for health care to be available in the early morning and in the evening. Lacking transport, they also need care in their homes if patients find it difficult to travel. Compared with CHS services, retail drug outlets and private practitioners were much more available, especially out of working hours, and private practitioners were much more ready to make home visits.

The technical ***quality of service*** is judged by households on criteria of perceived competence of health workers, the state of physical facilities, the presence and condition of medical equipment, and the supposed quality of drugs. Households may be good judges of technical quality: the quality ranking of the four study CHSs by households was the same as our own made on professionally defined criteria. Generally, public service providers were thought to deliver better quality and more reliable technical care than that available in the private sector. However, an important additional criterion of quality for households is the attitude of providers, with households looking for health workers who are caring and communicative. Generally private practitioners scored higher on this criterion than public providers.

With respect to the individual health care options, ***home remedies*** were cheap, but they were rarely used alone and seemed to be employed mainly as a complement to formal health care options, especially by the non-poor in the case of shorter illnesses.

Over the counter drug purchases were relatively cheap and were used frequently, especially by poor households and in the case of shorter illnesses. The buyer could control how much medicine was purchased and could often negotiate a deferral of payment. Purchases were convenient for households as retail outlets are often situated in shopping areas and are usually open outside formal working hours. However, households sometimes doubted the quality of the drugs and an OTC transaction lacked a health care consultation.

Commune public services were the option most frequently used by households, both poor and non-poor, for a health care consultation. The CHSs were generally trusted. They had equipment, were believed to dispense reliable drugs, could refer patients to hospital, and were the provider of preventive services. The CHS was relatively cheap, but the difficulty households experienced in negotiating a deferral of payment was a major disadvantage. Another important disadvantage was the reluctance of CHS workers to provide out of hours care or make home visits. Both these problems of service responsiveness were more serious for poor households. Some CHS workers failed household expectations on criteria of professional skill or attitude.

Private practitioners were relatively expensive and lacked clinic facilities and equipment. They were used less often than the commune public services. But private practitioners had advantages in the areas of CHS weakness: they were always caring in style, they were happy to provide care out of hours and in patients' homes, and they were prepared to wait for payment or accept payment in kind. In the event of more serious illness that would incur greater expenditure, households increased their use of private practitioners rather than of the CHS. The advantages of private practitioners were particularly important for the poor, who used these providers with virtually the same frequency as the non-poor, despite the expense.

Hospital outpatient services were by far the most expensive of the options and were used with by far the least frequency. Hospitals were seen by households to have superior professional skill and good facilities, equipment and drugs. On the other hand, hospital workers were felt to be impersonal and rude. Hospital ambulatory care was mainly used by households, even in the non-poor category, in the event of more serious illness.

The CHSs are the primary care provider of ultimate recourse in Vietnam and the backbone of the government's strategy for delivering integrated primary health care services. The rate of use of CHSs in our study communes was double that found for rural areas in the VLSS, doubtless because of the investments in CHS facilities and staff that had been made over the years.

Provincial governments need to ***allocate the necessary resources to CHSs*** to ensure that at least: facilities are renovated; a basic set of medical equipment is provided; the health workers are taken into state employment according to government policy and are given refresher training in primary health care; and a system of supportive district supervision of CHSs is established.

Technical improvements are a necessary, but may not be a sufficient, condition for attracting patients. In our intervention research, we attempted to address the weaknesses in ***CHS service responsiveness***, but with little success. The need for improved public service responsiveness was not sufficiently visible to local authorities. Improvements in the technical quality of health care are easier to effect than changes requiring action in the wider political environment, especially if this involves the allocation of new resources. Yet greater user friendliness is necessary if people are going to benefit more from what the public health service has to offer technically.

A parallel intervention to create ***a coordinated public/private mix of commune health care*** was successful, at least in its first year of operation. Most of the private practitioners in our study communes were retired public health cadres who had been trained to not more than the secondary medical level. Their private practice was therefore strictly against the law. A vice minister of health approved a form of licensing for them for the purposes of our pilot intervention. The licensing

employed a legal framework similar to that for VHWs: the practitioners would be authorised for clinical practice under the supervision of the public health service. In exchange for the licence, participating private practitioners agreed to have their clinical practice monitored by the public health service, to prescribe from a limited list of essential drugs, and to assist in public health programmes. Their fees were not to be monitored directly, but their charges had to be "affordable by the poor".

The scheme has still to mature, but it established a framework for regulating the quality and cost of commune private health care and supported the delivery of integrated curative and preventive primary care services. The scheme is replicable in other parts of the country and, with adaptations, in other low income countries.

WIDER IMPLICATIONS

The main purpose of our research was to identify ways of increasing the access of poor households to primary health care services of good quality and responsiveness in Vietnam. Our conclusions, however, have broad applicability to other transitional economy countries, especially the developing transitional economies of east Asia, and also to many low income market economy countries. In this section we look at some of the implications of our research for this wider context.

Public health system: protect the legacy and improve technical quality and user friendliness

In the transitional economies, be it those of the former Soviet Union and Europe that have experienced recession, or those of east Asia that have achieved strong growth, two factors have combined to threaten the health of large numbers of people: a new poor has arisen and public health services have been destabilised. Liberalisation has brought people more choice of health care options, but the poor now find health services much less accessible and affordable. Although Vietnam and other transitional economies have protected public health spending during the reform process and have increased expenditure as and when they could, resources have often not been allocated to where they are most required: at the base of the health system in contact with the people in greatest need.

The transitional economies have a precious legacy in the health services developed during the period of socialist planning. These health services had many problems of low quality and efficiency, but they were there for virtually the whole population. With economic reform, the public health system is still the provider of ultimate recourse for the poor and indeed many others - like those in our study communes - still regard the public service as their normal port of call for formal health care. It is the main vehicle for the delivery of preventive services.

In a liberalising climate policy can readily be fixated on privatising reforms, rather than protecting and improving key social institutions that have already been

developed and have given service in the past. It is to the credit of Vietnam that, to preserve the rural health service after the decollectivisation of agriculture, the government took commune health workers into state employment. This bucked the privatisation trend and 'nationalised' health cadres who had previously been in the cooperative sector of the economy. This is arguably the single most important measure taken in the health sector during the transitional period. It rescued and stabilised the primary health care system of the country. To appreciate the extent of its importance, comparison should be made with China where no such measure was taken. There, rural reforms resulted in the collapse of the cooperative health financing schemes, a large scale privatisation of village health post staff and a serious deterioration in the rural three tier health network. It is thus necessary to distinguish between reform of economic sectors and reform of social sectors. It would be a historic loss if the health service legacy bequeathed to the transitional economies by the planned past is not maintained and developed under conditions of reform. A comparable conclusion can be drawn for low income market economies, where the health service gains made in the years after decolonisation should also be protected and the public health services rehabilitated from the deteriorated state in which economic crisis, debt and adjustment have left them.

It is not within the scope of this report to go into detail about what technical measures are needed to reconstruct and rehabilitate public health services in poor countries. They have been well rehearsed and include actions in the areas of decentralisation, capital investment, recurrent funding, donor management, resource distribution and use, management systems, personnel development, drug supply and use, supervision, programme development, and so on.

However, for all the mountain of technical problems that must be solved, they are in many respects more straightforward to resolve over time than the problems of service responsiveness. This is the Achilles heel of public sector services and health services are no exception. No public sector client is unfamiliar with unmotivated, minimalist and routinised public servants, just waiting for the time to knock off work (if they do wait), not to speak of those who are outright abusive or self-seeking. This is one of the main reasons why people, even the poor, prefer to patronise the private sector and will pay more for the service responsiveness they find there. Public health services must become much more user friendly if people are going to be attracted to attend and benefit from what they have to offer technically.

Where public employees have lost real income, a recovery of salary levels is a necessary condition for raising health worker morale, motivation and performance. We saw this in our study communes. But, as we also saw, it may not be a sufficient condition for improving service responsiveness. This was the area where we signally failed to make impact.

The generation of a user friendly public health service calls for a complex, multidimensional programme of action to promote professional ethics and a culture

of service (Segall 2000). Ethical behaviour can be promoted through a raft of complementary approaches including basic and post-basic training, the establishment of good practice, participatory management, supportive supervision, performance related rewards, accountability to users and communities - and above all political leadership. On the negative side, disciplinary procedures for unsatisfactory performance need to be made swift and effective. Unfortunately, in countries in transition from command and control bureaucracies to market forces, there is no great tradition in the public service of responsiveness to client needs and neither is there a strong political awareness of the necessity to promote it. (Of course these countries are not alone in this.) The market appears to be the solution to the problems of the old bureaucracy and user friendliness in the public service is not seen as a priority. Yet lack of service responsiveness is arguably one of the main deficiencies of public health services and the problem needs to be recognised and addressed explicitly.

Exemption of poor households from public health care charges

For primary as well as hospital care: estimate cost and identify funders

User fees have been introduced or increased in the public health services of many developing countries since the 1980s, although the amount of revenue they generate - especially net of collection costs - is often small (Creese 1990). They are certainly a fact of life in transitional economies, especially those of east Asia. There is widespread recognition that a user fee policy should include provision for the poor to be exempted, at least in part, from charges (World Bank 1993). The implementation of exemption systems is, however, fraught with problems, including those of identifying the eligible poor and administrative incapacity (Russell and Gilson 1997). In these respects, the transitional economies like Vietnam that have maintained their political and social structures intact may be better placed than other countries to implement effective exemption systems.

The relative importance to households of costs of primary versus hospital care will vary in different circumstances according to the availability, quality and price of health care options. The expense of a hospital admission may be dramatic and have a disastrous impact on the economy of households. Such catastrophic costs are there for all to see, but fortunately they are quite rare. Our research indicates that, in at least some places, the cumulative costs of relatively inexpensive but frequent acts of ambulatory care, often taking place at the local level, are responsible for bulk of health care spending by poor households and are not affordable by them. Health care expenses of low unit cost are much less visible and may not command the attention they merit from political authorities. Clearly these costs must be identified and quantified in any consideration of fee exemption policies.

In addition, any attempt by households to minimise costs by avoiding or delaying primary care treatment can be detrimental to the health of the patient and result in

the need for hospital care. Financial barriers to primary health care are both bad medicine and bad economics. It can also be bad economics to provide (as in Vietnam) exemptions for hospital treatment but not for primary care, which gives exempted households the incentive to bypass primary level services and press for hospital care at subsidised prices.

Thus exemption policy should be based on study of the pattern of household health care seeking and expenditure. It should ensure access of the poor to essential primary and hospital care. As in our study, proposed exemption policies should be costed and potential funding sources identified.

Link to promotion of rational drug use: good medicine and good economics

Our study of the quality of health care allowed us to identify a general tendency to polypharmacy. This was most marked with the public primary care facilities, although it was present with all the health care options including OTC drug purchases. At the time, the commune health workers were receiving a high proportion of their public income from drug mark up fees, which gave them an incentive to overprescribe. Polypharmacy and overprescription are of course worldwide problems. It is sad to reflect that the poor may be placing their household economy under strain to pay for more, and more expensive, drugs than they need in medical terms and which may be subjecting them unnecessarily to adverse effects.

Our proposal for a primary level fee exemption scheme was linked to the reinforcement of essential drug policies. Subsidies for poor households would cover the cost of certain key essential drugs only, to be used in accordance with official therapeutic guidelines. This subsidy system would not only promote better prescribing practices by public health workers. It would also promote a more restricted pattern of drug consumption by households, especially if it were accompanied by a public education programme on the better use of medicines. Over time, this combination of measures would help to reduce unnecessary drug consumption and expenditure, notably by poor households. This approach has general applicability and should be considered in other settings.

Unlicensed rural practitioners: grant a licence conditional on cooperation with public health system

Private practitioners are often rated highly by households by virtue of service responsiveness, which is frequently the area of greatest weakness of the public sector. The practitioners are courteous and caring, convenient of access and flexible in the terms of payment (Tipping and Segall 1995). These qualities can be particularly important for low income households and recourse to small scale private care occurs even in poor and rural areas of the poorest countries. Yet private practitioners are often relatively expensive and the technical quality of their care can be low.

Since the economic crisis and reforms of the 1980s and 1990s, developing countries have seen a burgeoning of private medical practice, especially of an ambulatory kind (Hanson and Berman 1998). In addition to the private legal and illegal activities of public health workers, in some countries public sector downsizing and/or voluntary resignations have added a large number of one-time public health employees to the private market (Segall 2000). These vary from medical doctors, nurses and midwives, through all grades of formally trained health cadres to village health workers. There are also increasing numbers of informal drug sellers and retail pharmacy outlets, in addition to the reservoir of traditional healers. Many of these private practitioners are not qualified for independent practice and are practising illegally in an unlicensed capacity. Virtually all the private care, especially in rural areas, is unregulated and unmonitored. Informal private practice by health workers has always existed in developing countries, but the economic reform environment has resulted in a great expansion of this activity, much of it independently of any specific health sector reforms, so called passive privatisation (Muschell 1995).

In some countries like India, public health services are attempting to improve the quality of private sector care, including that of semi-qualified practitioners (World Bank 1993: 128). In our study communes, unlicensed practitioners were offered official approval for private practice in exchange for working in collaboration with the public health system. Some practitioners preferred to continue to work informally, but others were uncomfortable about their illegal status and opted for official recognition and the professional advantages that would flow from it. This system created a framework for regulating the quality and cost of private health care and supported the delivery of integrated curative and preventive primary care services.

It is understood that the commune structure of Vietnam lends itself to this type of close public/private collaboration, but it could well be replicable in other east Asian transitional economies. It might be less easy to apply in other political environments, but even under less socially controlled conditions unlicensed health workers might welcome some deal with local health authorities along the lines of the Vietnam study intervention. The terms and conditions of any public/private contract would be adapted to the circumstances of the particular country and locality concerned.

Research methodology

Use of complementary methods: study demand and supply sides together

Although the use of qualitative methods is increasing in studies of health care seeking behaviour, much research in developing and transitional economy countries still employs mainly quantitative techniques (Tipping and Segall 1995; Tipping 2000). Yet we need to know both what health care actions households take and the reasons that they take them. Qualitative research provides information on perceptions, motivations and a range of real life factors that may be the main drivers of household health care decisions. It also allows insight into the longer term consequences to households of illness and illness related costs. The combined use of complementary quantitative and qualitative methods thus delivers a depth of understanding of health related behaviour that is impossible to achieve with either methodological approach alone. A mix of research methods also allows findings from different sources to be cross checked ('triangulated') with one another (e.g. health facility data compared with household survey findings).

Even health care seeking studies that have used a mix of quantitative and qualitative methods have, however, rarely investigated the quality of the care to which households have access. Yet, if we are interested in health outcomes, as distinct from only health care process, we also need to evaluate the medical value of the care that is provided. This added dimension to health care seeking research also provides an independent assessment of the perception by communities of health care quality. In other words, we need to use both quantitative and qualitative methods and to study health care from both the demand and supply sides.

We adopted this broad based approach and it gave us an all round perspective on health care in the locality. This allowed us to draw policy conclusions and promote health system interventions that were adapted to the area. We are unaware of any other health care seeking study of this multidimensional kind in developing or transitional economy countries.

The approach does have its downsides. It demands a wide skill mix among the researchers and, being multidimensional, may be easier to apply on a relatively small scale for both operational and cost reasons. We are not suggesting, therefore, that this broad based approach need be employed in all circumstances. But it is necessary to identify the range of factors involved in the health care seeking process and understand their interactions. In this process, both household perceptions on the one hand, and the technical quality of available health care on the other, need to be taken into account in arriving at valid policy conclusions.

Use of longitudinal household illness record

Health care demand studies most often employ cross sectional surveys that require respondents to make a retrospective recall of illness, often over the period of the previous 2-4 weeks. By contrast, we used a cross sectional survey to document the socioeconomic characteristics of households, but then registered prospectively the occurrence of illness episodes and the health care actions taken by means of a longitudinal household illness record.

We have discussed the use of this record in detail elsewhere (Tipping and Segall 1996). Here we only summarise the advantages and disadvantages of the method. There are four main advantages. First and foremost, by recording illness events at the time or shortly after they occur, the problem of retrospective recall is avoided. As a result, our illness record data showed great internal consistency and the findings were robust across eight data collection sites involving different interviewers (Tipping *et al*. 1994). We believe the method gave a very complete and accurate record of illness events. Second, the longitudinal record provides a measure of incidence, as distinct from prevalence, of illness. This is more appropriate for the mainly acute disease pattern of poor communities. Third, because illness is recorded over time, fewer households need be surveyed in order to generate a given number of sickness episodes, and these households can be studied in greater depth. For example, our 664 households surveyed over 16½ weeks yielded 10 956 household weeks of illness risk; generating this number of household weeks by cross sectional survey using a two week recall period would have required 5478 households. The number of households in the longitudinal survey can still be large enough to constitute a representative population sample. The fourth advantage is that a longitudinal method is convenient for recording illness episodes during different seasons, because the survey can simply run on without interruption from one season to the next. Of course cross sectional surveys can also be carried out during different seasons.

The disadvantages of the longitudinal record are that it calls for good organisation that must be sustained over time and involves the need for local interviewers who will work reliably during the whole period. Not everywhere will be as conducive to such an approach as in the communes of Vietnam. But where it is possible, we commend this survey method for health care seeking studies.

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ANNEX 1

RELATION OF EDUCATION OF HOUSEHOLD HEAD, AND AGE AND SEX OF THE ILL PERSON, TO AMBULATORY HEALTH CARE SEEKING AND EXPENDITURE

Educational level of household head

We wanted to see if education had an impact on health care seeking behaviour in the study communes. Health care decisions in the household are usually made by, or with the concurrence of, the family head, especially where expenditure is concerned. We therefore investigated the influence of the educational level of the household head, rather than that of the sick person, many of whom were in any case children.

When households are sorted by category of educational level of the head, the average rate of reported illness per person tends to increase with increasing education (table A1.1), which is likely to be the result of more reliable reporting rather than more actual morbidity. The higher average rate of illness reporting by non-poor compared with poor households (table 2) can be seen for each household educational category, so the presumed better illness reporting of the non-poor does not appear to be due to their having better educated household heads.

When we analysed illness rates by individuals rather than household educational groups, we found a very weak though significant correlation between reporting rates and educational level of household head ($r=0.08$, $p<0.01$). In poor rural counties of China, no significant difference in illness reporting rates by educational level of patients (or mothers in the case of sick children) was found on multivariate analysis of household survey findings (Li *et al*. 1997).

In our study, therefore, whatever effect the household head's educational level had on illness reporting, it appears to be quite small. Nevertheless, to eliminate any effect this might have in comparisons of rates of consultation and health care spending by education, we analysed these aspects of health care seeking per reported episode or per person reporting illness, rather than per person.

No clear relation can be seen on cross tabulation between the educational category of household head and rates of health care consultation per ill person (table A1.1). Neither is there a clear relation for poor or non-poor households separately between educational category and mean ambulatory health care spending per episode or per person reporting illness (table A1.2). An unexpected finding was that, for the two household incomes groups together, average spending tends to fall off with rising educational category, especially with the highest category. Most of the state employees in our household sample were in the highest educational category and at the time they enjoyed exemption (at least

in principle) from official fees in public health facilities. We looked to see if this exemption could explain the lower spending of the most educated household category. In fact, removing state employees from the analysis had no effect on the negative expenditure trend with rising educational category.

However, in multiple linear regression of individual episodes, differences in ambulatory health care spending per episode by educational level of household head were not significant statistically, including or not state employees in the analysis (annex 3: table A3.2). It appears that education, at least as it was reflected in the level attained by the head of household, did not have an important effect on the decision to seek a health care consultation or on the level of ambulatory health care expenditure. Similarly, educational level of working age adults was not found to be related to their use of health services in an urban and rural household survey in eight provinces of China (Henderson, Akin, Li, Jin, Ma, and Ge 1994).

The pattern of choice of ambulatory health care option in relation to the educational level of the household head is shown in table A1.3. When health care acts are cross tabulated by health care option and both household educational and income groups, the numbers in some cells become small and much of the variability seen in the table is in association with the small numbers. We therefore used multinomial regression of individual episodes to examine the probability, relative to the purchase of OTC drugs, that a first health care act would be a consultation with one of the three types of provider (annex 3: table A3.1).

Educational level of the household head did not appear to have an important relation to the likelihood of a commune public consultation. An interesting finding is that members of households with illiterate heads were more likely to seek a private consultation than those with more educated heads, especially for shorter illnesses ($p<0.01$). Perhaps families with more education were more discriminating about their use of private practitioners. On the other hand, members of households with heads of educational level grade 3 or above were over six times more likely than those from households with illiterate heads to obtain a hospital consultation ($p<0.05$). Because state employees qualified for fee exemption in hospitals, they were more likely to attend hospital for this reason alone. Indeed, removing state workers from the analysis attenuated the educational effect: although members of households with heads in the highest educational category were still more likely to obtain a hospital consultation, the difference no longer achieved statistical significance.

An interesting insight into health care seeking behaviour is provided by table A1.4. This shows a smooth inverse relation between rising educational category of household head and the percentage of household illnesses treated with home remedies. Analysis of individual episodes shows a weak but significant negative linear correlation between these two variables ($r=-0.12$, $p<0.01$). Evidently, more education results in somewhat less faith in traditional home practices.

Overall, educational level of the head of household does not appear to have exerted a strong influence on household health care seeking in our study communes.

Age and sex of ill person

Our focus group discussions indicated that some preference was given to the health of a male head of household, because of his income generating capacity: if a wife was ill, the husband could substitute for her work, but the reverse was often not the case, especially if heavy labour was involved. This male-female asymmetry was said to be more marked among poor households, because non-poor women were often engaged in income generating activities. We investigated whether household health resources were allocated preferentially to males in general and to (older) men in particular. We wanted to see if ageism or sexism was influencing household health care decisions.

Different morbidity patterns occur at different ages and between the sexes. In particular higher rates of illness occur in young children and older people, and in women in relation to pregnancy and childbirth. We observed these differences, but they were not the focus of our study. We examined whether, when an illness episode occurred, was there a systematic difference in the way that patients of different sex and age were treated. We report here on ambulatory health care spending and choice of health care option.

Table A1.5 shows average spending per act of each of the ambulatory health care options by sex of patient and household income group. While some tendency towards higher spending in males can be seen in the cross tabulations, in no case does the male-female difference achieve statistical significance. Similarly, average ambulatory health care expenditure per episode or per person reporting illness was higher in males than females for both income groups, but the differences are again non-significant statistically (tables A1.6 and A1.7).

This was also generally the male-female pattern for each age group separately, although in poor households average expenditure was slightly higher per episode and per ill person in females in the 0-4 year and 60+ year age groups (tables A1.6 and A1.7). In line with the views expressed in the focus groups, more money was spent on average on men than women in the 15-59 year age group, although the difference is not statistically significant in either income group. There were no important differences between the average expenditure made per episode in young to middle aged men on the one hand and older men on the other, or between young to middle aged women on the one hand and older women on the other.

In multiple linear regression of individual episodes, analysis reveals greater ambulatory health care expenditure on men than women, but again the difference is not statistically significant (annex 3: table A3.2). Whereas there was also no

significant difference in spending per episode between men and boys, the difference between men and girls was substantial and significant ($p<0.01$), a difference that is seen most markedly in the case of longer illnesses.

It does seem, therefore, that some preference in health care spending was given to males over females in our household sample, although the overall differences were not great and did not achieve statistical significance. From multivariate analysis, however, it does appear that, compared with men, significantly less ambulatory health care expenditure was made on female - but not on male - children. In other words, boys were given priority over girls.

The pattern of choice of ambulatory health care option in relation to age and sex of the patient and household income group is shown in tables A1.8-A1.10. When health care acts are cross tabulated by all these variables, the numbers in some cells become small and much of the variability seen in the tables is in association with the small numbers. We therefore used multinomial regression of individual episodes to examine the probability, relative to the purchase of OTC drugs, that a first health care act would be a consultation with one of the three types of provider (annex 3: table A3.1).

Women were slightly less likely than men to seek a consultation with a private practitioner or hospital, although the differences were not statistically significant. There was no difference between men and women in the use of commune public services. Boys were more likely than men to have a commune public consultation, a difference that did not quite achieve statistical significance overall, but did when only longer illnesses were considered ($p<0.05$). Reference to tables A1.8-A1.10 shows that this male child effect is due to the different treatment of children in the 0-4 year age group. There was a slight preference for taking girls to commune public services for longer illness, but the difference compared with men was not significant statistically. Both boys and girls were less likely than men to have a private or hospital consultation, but the differences were only significant in the case of hospital use ($p<0.05$).

In poor rural counties in China, Li *et al*. (1997) found that, of people reporting illness, children used formal health care providers more, and older people less, than young adults. We did not observe this but, like them, we did find a lesser overall use of providers by females reporting illness than males, though in both studies the difference was not statistically significant. On the other hand, of working age adults reporting illness, women were found to use health services more than men in an urban and rural household survey in eight provinces of China (Henderson *et al*. 1994). Then again, gender was not found to affect significantly the choice of health care provider in a relatively rich rural county of China (Yip *et al*. 1998).

In our study, the clearest differences were that boys benefited from more ambulatory health care spending than girls and children were less likely to have a

hospital consultation than adults. There was a general trend of favouring the health care of males over females, but the differences were mostly not great or statistically significant.

Table A1.1. Illness episodes and health care consultations by educational level of household head and household income group

Income group/ level of education	Episodes			Consultations		
	Number	Mean/ person/ year	95% confidence interval	Number	Mean/ill person/ year	95% confidence interval
Poor						
• illiterate	35	0.99	0.71-1.27	31	2.88	2.20-3.56
• literate[1]	60	0.99	0.77-1.21	35	1.84	1.30-2.38
• grade 1-2	646	1.18	1.10-1.26	367	1.93	1.73-2.13
• grade 3 +	63	1.30	1.04-1.56	37	1.92	1.44-2.40
• total	804	1.17	1.09-1.25	470	1.97	1.79-2.15
Non-poor						
• illiterate	17	1.23	0.69-1.77	10	1.95	0.81-3.09
• literate[1]	32	1.62	1.22-2.02	18	1.77	0.95-2.59
• grade 1-2	239	1.33	1.19-1.47	164	2.32	2.02-2.62
• grade 3 +	69	1.57	1.27-1.87	55	2.69	1.95-3.43
• total	357	1.39	1.27-1.51	247	2.32	2.06-2.58
Total						
• illiterate	52	1.06	0.80-1.32	41	2.59	1.99-3.19
• literate[1]	92	1.15	0.95-1.35	53	1.82	1.38-2.26
• grade 1-2	885	1.22	1.14-1.30	531	2.04	1.86-2.22
• grade 3 +	132	1.43	1.23-1.63	92	2.31	1.85-2.77
• total	1161	1.23	1.17-1.29	717	2.08	1.94-2.22

1. Literate only.

Table A1.2. Expenditure on ambulatory health care by educational level of household head and household income group (dong '000)

Income group/ level of education	Expenditure per episode				Expenditure/ill person/year			
	Number of episodes	Mean	95% confidence interval	Median	Number of episodes	Mean	95% confidence interval	Median
Poor								
• illiterate	35	26.9	13.5-40.5	11.4	35	87.7	43.7-131.7	37.8
• literate[1]	60	15.1	11.5-18.7	10.0	60	47.5	36.1-58.9	31.5
• grade 1-2	646	20.1	17.3-22.9	10.0	646	68.4	58.8-78.0	31.5
• grade 3 +	63	13.5	9.3-17.7	9.5	63	44.7	30.7-58.7	31.5
• total	804	19.6	17.2-22.0	10.0	804	65.7	57.9-73.5	31.5
Non-poor								
• illiterate	17	21.6	4.4-38.8	9.7	17	75.9	15.1-136.7	25.2
• literate[1]	32	47.3	13.5-81.1	15.0	32	148.9	42.5-255.3	47.3
• grade 1-2	239	27.5	19.9-35.1	12.0	239	92.4	67.0-117.8	37.8
• grade 3 +	69	18.9	9.3-28.5	7.0	69	64.3	31.5-97.1	23.9
• total	357	27.3	21.1-33.5	10.6	357	91.6	70.6-112.6	37.8
Total								
• illiterate	52	25.2	14.6-35.8	10.0	52	84.0	48.6-119.4	35.5
• literate[1]	92	26.3	14.1-38.5	11.0	92	82.9	44.1-121.7	34.7
• grade 1-2	885	22.1	19.3-24.9	10.0	885	74.9	65.1-84.7	31.5
• grade 3 +	132	16.4	11.0-21.8	8.9	132	54.8	36.6-73.0	28.5
• total	1161	21.9	19.3-24.5	10.0	1161	73.7	65.1-82.3	31.5

1. Literate only.

Table A1.3. Types of ambulatory health care act by educational level of household head and household income group
% (number of acts)

Income group/ level of education	Home remedies	Over the counter drugs	Consultation			Total
			Commune public	Commune private	State hospital	
Poor						
• illiterate	28 (18)	24 (15)	23 (15)	20 (13)	6 (4)	100 (64)
• literate only	20 (17)	40 (35)	37 (32)	3 (3)	0 (0)	100 (87)
• grade 1-2	24 (234)	39 (387)	21 (208)	11 (111)	5 (48)	100 (988)
• grade 3 +	17 (13)	36 (28)	25 (19)	18 (14)	5 (4)	100 (78)
• total	23 (283)	38 (465)	23 (274)	12 (140)	5 (55)	100 (1217)
Non-poor						
• illiterate	28 (9)	42 (13)	8 (2)	21 (7)	2 (1)	100 (31)
• literate only	37 (23)	35 (22)	19 (12)	5 (3)	5 (3)	100 (64)
• grade 1-2	26 (100)	32 (123)	26 (100)	11 (44)	5 (20)	100 (388)
• grade 3 +	17 (19)	34 (39)	25 (28)	9 (10)	15 (17)	100 (113)
• total	25 (151)	33 (197)	24 (143)	11 (64)	7 (41)	100 (596)
Total						
• illiterate	28 (27)	30 (28)	18 (17)	20 (19)	4 (4)	100 (96)
• literate only	27 (41)	38 (57)	29 (44)	4 (6)	2 (3)	100 (150)
• grade 1-2	24 (334)	37 (510)	22 (309)	11 (155)	5 (68)	100 (1376)
• grade 3 +	17 (33)	35 (67)	25 (47)	12 (24)	11 (21)	100 (191)
• total	24 (434)	37 (662)	23 (417)	11 (204)	5 (96)	100 (1813)

Table A1.4. Household use of home remedies by educational level of household head

Level of education	Illness episodes with use of home remedies	
	Number	% total episodes
Illiterate	27	51
Literate only	44	42
Grade 1	143	40
Grade 2	193	36
Grade 3	27	26
Vocational school	3	24
University	2	12
Total	439	37

Table A1.5. Expenditure per ambulatory health care act by sex of patient and household income group (dong '000)

Income group	Home remedies		Over the counter drugs		Consultation					
	Male	Female	Male	Female	Commune public		Commune private		State hospital[1]	
					Male	Female	Male	Female	Male	Female
Poor										
• number of acts	129	156	194	249	124	156	68	69	23	25
• mean/act (95% CI)	2.7 (1.3-4.1)	2.6 (1.6-3.6)	12.6 (9.4-15.8)	11.2 (9.0-13.4)	13.6 (10.2-17.0)	13.6 (9.8-16.4)	32.7 (20.5-44.9)	26.5 (18.1-34.9)	40.4 (23.2-57.6)	40.5 (19.7-61.3)
• median	0.0	0.0	6.9	6.0	9.0	7.0	15.4	10.0	25.6	21.0
Non-poor										
• number of acts	72	79	71	112	73	66	25	38	13	13
• mean/act (95% CI)	2.2 (0.6-3.8)	1.1 (0.3-1.9)	16.9 (8.9-24.9)	16.9 (10.5-23.3)	20.8 (9.6-32.0)	15.2 (10.8-19.6)	32.2 (11.6-52.8)	27.3 (15.1-39.5)	95.7 (30.7-160.7)	59.4 (0.0-143.0)
• median	0.0	0.0	7.0	8.4	7.0	7.1	10.0	10.8	48.9	19.2
Total										
• number of acts	201	235	265	361	197	222	93	107	36	38
• mean/act (95% CI)	2.5 (1.5-3.5)	2.1 (1.5-2.7)	13.7 (10.5-16.9)	13.0 (10.6-15.4)	16.2 (11.6-20.8)	13.9 (11.5-16.3)	32.6 (22.2-43.0)	26.8 (19.8-33.8)	60.6 (33.6-87.6)	46.8 (16.2-77.4)
• median	0.0	0.0	7.0	6.2	8.0	7.0	14.7	10.0	30.0	20.7

1. The hospital cost analysis excludes zero priced consultations which certain categories of patient (like public employees) enjoyed in state facilities.

Table A1.6. Expenditure on ambulatory health care per episode by age and sex of patient and household income group (dong '000)

Income group/ age in years	Male				Female				Total	
	No. of episodes	Mean	95% confid. interval	Median	No. of episodes	Mean	95% confid. interval	Median	Mean	Median
Poor										
0 - 4	65	9.9	6.5-13.3	6.0	80	11.4	6.6-16.2	5.0	10.7	5.6
5-14	94	15.8	10.8-20.8	10.0	80	9.7	7.7-11.7	8.0	12.9	9.5
15-59	192	26.7	20.3-33.1	11.9	262	22.5	18.3-26.7	10.0	24.3	10.5
60+	15	24.6	18.4-30.8	23.7	22	27.2	10.2-44.2	10.0	26.1	10.5
total	366	20.8	17.0-24.6	10.0	444	18.4	15.6-21.2	9.0	19.5	10.0
Non-poor										
0 - 4	27	24.5	13.7-35.3	16.2	19	9.6	5.8-13.4	6.5	18.2	12.0
5-14	26	39.9	6.1-73.7	6.2	45	21.5	0.0-44.9	7.0	28.2	7.0
15-59	91	30.9	18.3-43.5	11.4	121	27.4	17.2-37.6	11.7	28.9	11.9
60+	14	33.9	6.9-60.9	14.4	14	21.6	12.0-31.2	27.5	27.8	17.2
total	158	31.5	21.9-41.1	12.0	199	23.9	15.7-32.1	10.0	27.3	10.6
Total										
0 - 4	92	14.1	9.9-18.3	6.5	99	11.0	7.2-14.8	5.6	12.5	6.0
5-14	120	20.9	12.5-29.3	9.9	125	13.9	5.3-22.5	8.0	17.4	8.9
15-59	283	28.1	22.3-33.9	11.9	383	24.0	19.6-28.4	10.4	25.7	11.0
60+	29	28.9	16.1-41.7	18.7	36	25.1	14.1-36.1	12.0	26.8	15.0
total	524	24.0	20.2-27.8	10.0	643	20.1	16.9-23.3	9.8	21.9	10.0

Table A1.7. Annual expenditure on ambulatory health care per person reporting illness by age and sex of patient and household income group (dong '000)

Income group/ age in years	Male				Female				Total	
	No. of episodes	Mean	95% confid. interval	Median	No. of episodes	Mean	95% confid. interval	Median	Mean	Median
Poor										
0 - 4	65	34.0	22.4-45.6	20.2	80	37.6	22.0-53.2	18.9	36.1	18.9
5-14	94	55.7	32.9-78.5	31.5	80	31.4	24.4-38.4	25.2	43.9	28.4
15-59	192	88.0	66.6-109.4	37.8	262	77.0	62.4-91.6	31.5	81.8	34.7
60+	15	77.6	57.8-97.4	74.7	22	87.9	33.3-142.5	32.2	83.6	47.3
total	366	70.2	57.2-83.2	34.7	444	61.7	52.1-71.3	26.8	65.6	31.5
Non-poor										
0 - 4	27	82.7	44.7-120.7	47.3	19	30.1	18.3-41.9	20.5	59.7	11.6
5-14	26	135.5	16.3-254.7	18.4	45	74.7	0.0-155.7	33.1	97.1	31.3
15-59	91	102.6	61.0-144.2	37.8	121	93.4	58.8-128.0	43.5	97.4	38.3
60+	14	107.1	21.7-192.5	45.3	14	68.1	37.9-98.3	86.8	87.5	54.3
total	158	104.9	72.7-137.1	37.8	199	80.9	53.3-80.9	36.9	91.6	37.8
Total										
0 - 4	92	48.3	33.7-62.9	22.5	99	36.1	23.5-48.7	18.9	41.8	20.5
5-14	120	73.4	41.4-105.4	28.4	125	46.3	18.1-74.5	30.9	59.2	28.4
15-59	283	92.7	72.9-112.6	37.8	383	82.3	67.3-97.3	34.7	86.8	37.8
60+	29	91.2	50.8-131.6	58.9	36	80.3	44.9-115.7	37.8	85.2	47.3
total	524	80.7	67.3-94.1	34.7	643	67.7	56.9-78.5	31.5	73.6	31.5

Table A1.8. Types of ambulatory health care act by age of patient and household income group
% (number of acts)

Income group/ age in years	Home remedies	Over the counter drugs	Consultation			Total
			Commune public	Commune private	State hospital	
Poor						
0 - 4	17 (35)	35 (74)	34 (70)	13 (26)	1 (3)	100 (207)
5-14	20 (51)	47 (117)	22 (56)	9 (21)	2 (4)	100 (249)
15-59	26 (185)	36 (258)	19 (136)	12 (86)	7 (47)	100 (712)
60+	23 (14)	31 (19)	33 (20)	11 (7)	2 (1)	100 (60)
total	23 (285)	38 (468)	23 (282)	11 (140)	4 (55)	100 (1229)
Non-poor						
0 - 4	25 (18)	32 (22)	34 (24)	5 (3)	5 (4)	100 (71)
5-14	23 (24)	39 (40)	25 (25)	10 (10)	3 (3)	100 (102)
15-59	26 (100)	32 (122)	23 (86)	11 (41)	8 (31)	100 (379)
60+	23 (10)	31 (14)	18 (8)	20 (9)	8 (3)	100 (44)
total	25 (151)	33 (197)	24 (143)	11 (64)	7 (41)	100 (596)
Total						
0 - 4	19 (52)	35 (96)	34 (94)	11 (29)	2 (6)	100 (278)
5-14	21 (74)	45 (157)	23 (81)	9 (32)	2 (7)	100 (352)
15-59	26 (286)	35 (379)	20 (221)	12 (127)	7 (78)	100 (1091)
60+	23 (24)	31 (32)	26 (27)	15 (15)	5 (5)	100 (104)
total	24 (436)	36 (665)	23 (424)	11 (204)	5 (96)	100 (1825)

Table A1.9. Types of ambulatory health care act by age of male patient and household income group
% (number of acts)

Income group/ age in years	Home remedies	Over the counter drugs	Consultation			Total
			Commune public	Commune private	State hospital	
Poor						
0 - 4	16 (16)	34 (34)	36 (35)	12 (12)	1 (1)	100 (98)
5-14	20 (26)	43 (57)	22 (30)	12 (16)	3 (4)	100 (132)
15-59	25 (76)	36 (110)	18 (55)	13 (39)	7 (22)	100 (302)
60+	40 (10)	23 (6)	19 (5)	19 (5)	0 (0)	100 (25)
total	23 (128)	37 (206)	22 (124)	13 (71)	5 (27)	100 (557)
Non-poor						
0 - 4	30 (13)	23 (10)	41 (18)	6 (3)	0 (0)	100 (44)
5-14	21 (8)	34 (13)	34 (13)	6 (2)	4 (1)	100 (39)
15-59	29 (47)	28 (45)	24 (39)	10 (17)	9 (15)	100 (164)
60+	20 (4)	25 (5)	22 (4)	18 (4)	15 (3)	100 (19)
total	27 (72)	28 (73)	28 (75)	10 (25)	7 (20)	100 (266)
Total						
0 - 4	20 (29)	31 (44)	38 (53)	10 (15)	1 (1)	100 (142)
5-14	20 (34)	41 (70)	25 (43)	11 (18)	3 (5)	100 (171)
15-59	27 (124)	33 (155)	20 (94)	12 (55)	8 (38)	100 (466)
60+	31 (14)	24 (10)	20 (9)	19 (8)	6 (3)	100 (45)
total	24 (201)	34 (279)	24 (199)	12 (96)	6 (47)	100 (822)

Table A1.10. Types of ambulatory health care act by age of female patient and household income group
% (number of acts)

Income group/ age in years	Home remedies	Over the counter drugs	Consultation			Total
			Commune public	Commune private	State hospital	
Poor						
0 - 4	17 (19)	36 (40)	32 (35)	13 (14)	2 (2)	100 (110)
5-14	21 (24)	52 (61)	22 (26)	5 (6)	0 (0)	100 (117)
15-59	27 (109)	36 (148)	20 (81)	12 (47)	6 (25)	100 (410)
60+	11 (4)	37 (13)	42 (15)	5 (2)	4 (1)	100 (35)
total	23 (156)	39 (262)	23 (157)	10 (69)	4 (28)	100 (672)
Non-poor						
0 - 4	17 (4)	45 (12)	23 (6)	2 (1)	13 (4)	100 (27)
5-14	24 (15)	42 (26)	19 (12)	12 (8)	3 (2)	100 (64)
15-59	25 (53)	35 (77)	21 (46)	11 (25)	7 (15)	100 (216)
60+	25 (6)	36 (9)	14 (4)	22 (5)	2 (1)	100 (24)
total	24 (79)	37 (124)	20 (68)	12 (38)	6 (21)	100 (331)
Total						
0 - 4	17 (23)	38 (52)	30 (41)	11 (15)	4 (5)	100 (136)
5-14	22 (40)	48 (87)	21 (38)	7 (13)	1 (2)	100 (181)
15-59	26 (162)	36 (225)	20 (127)	12 (72)	6 (40)	100 (626)
60+	17(10)	37 (22)	31 (18)	12 (7)	3 (2)	100 (60)
total	23 (235)	38 (386)	22 (225)	11 (107)	5 (49)	100 (1003)

ANNEX 2

ALTERNATIVES TO INCOME FOR IDENTIFYING HOUSEHOLDS VULNERABLE TO EFFECTS OF HEALTH CARE COSTS

Although in this study we have used income for the classification of households, estimation of household income (or expenditure) is quite difficult and in many places is not suitable for the routine identification of vulnerable households. Our cross sectional household survey documented a number of household characteristics (Truong *et al*. 1994) and we have looked to see if any of them might substitute income as an easier means of identifying households vulnerable to the effects of health care costs. We examined various characteristics from quality of housing to ownership of durable assets and patterns of consumption. We report here on two characteristics that seemed most promising for this purpose, both of them relating to household food consumption. The first is rice sufficiency, which has been used in Vietnam in the definition of poverty (Ministry of Planning and Investment 1996). The second is the frequency with which households eat meat.

For the definition of household vulnerability using these characteristics, we adopted the following criteria: shortage of rice to eat for at least one month in the previous year (this has sometimes been used in Vietnam as an indicator of poverty); and meat consumption of seven times or less a month (we found this frequency of consumption most effectively divided household groups by different rates of health care consultation and expenditure). We understand that these criteria are arbitrary and used them only for the purpose of an exploratory analysis.

We examined first the extent to which these food consumption patterns were associated with poverty as defined by income. Tables A2.1 and A2.2 show our household sample sorted by income group and respectively by rice sufficiency and meat consumption. Table A2.3 shows how the two food consumption indicators fare as a 'screening test' for household poverty.

While the vast majority of rice short households were poor, most poor households were rice sufficient. On the other hand, very few non-poor households were short of rice. Thus the sensitivity of rice shortage as a test of household poverty was low (29 per cent), while its specificity was high (94 per cent). With prevalence of poverty as it was in 1992 (67 per cent of households), rice shortage had good positive predictive value for household poverty (90 per cent) but low negative predictive value (39 per cent).

Most households eating meat up to only seven times a month were poor and most poor households fell into this consumption category. On the other hand, nearly a half of non-poor households also fell into the low consumption category. Thus low meat consumption as a test of household poverty had a better sensitivity (73 per cent) than rice shortage, but a lower specificity (53 per cent). With the 1992 prevalence of poverty, infrequent meat consumption had a lower positive predictive value (76 per cent) than rice shortage, but a slightly higher negative predictive value (50 per cent).

These results are reflected in the way that the food consumption indicators divided our study households by health care seeking and expenditure. There were no significant differences in the rates of reported illness episodes between the food consumption groups. However, to eliminate the effects of any minor differences, we express both consultation rates and expenditure levels per person reporting illness.

In the case of rice (table A2.4), households in the short or sufficient categories showed little difference in average rates of consultation per ill person. While rice sufficient households spent on average more money on ambulatory health care per ill person per year than rice short households, the difference was not statistically significant. In these respects, rice shortage discriminated vulnerable households much less well than income (tables 5 and 9). Rice short households with illness episodes spent on average twice as high a proportion of household income on ambulatory health care as rice sufficient households ($p<0.01$), but this difference was only half that seen between poor and non-poor households classified by income (table 10). Thus rice sufficiency as defined here performed much less well than income in identifying households vulnerable to health care costs.

By contrast, the frequency of meat consumption (table A2.5) showed significant differences in the expected direction between the two groups of households in consultation rates per ill person ($p<0.05$), annual ambulatory care spending per ill person ($p<0.01$), and the proportion of household income devoted to ambulatory health care ($p<0.01$), although the differential in that proportion was still only half that seen with households sorted by income. Thus meat consumption performed almost as well as income in identifying vulnerable households.

The predictive value of a screening test depends not only on its sensitivity and specificity, but also on the prevalence of the variable involved. The prevalence of poverty decreased in our study communes from about 67 per cent of households at the time of our baseline research in 1992 to 16 per cent of households in 1996. Assuming that the sensitivity and specificity of the food consumption indicators in identifying poor households remained the same in the conditions of 1996 as in 1992, the positive predictive values of both potential 'tests' of poverty fell while the negative predictive values rose (table A2.3). The same trend would be likely to apply to the usefulness of the indicators in predicting vulnerability to health care expenditures.

The identification of screening tests for vulnerability to health care costs was not a major purpose of our research and this is as far as our data goes. But these findings suggest that further research along these lines would be profitable. Of course the performance of the two indicators shown here depends on the definitions we used, which were only exploratory, and others should be investigated. But as they stand, household meat consumption looks promising and is quite easy to document.

Table A2.1. Household rice consumption by household income group: number of households (%)

Income group	Rice sufficiency		
	Short[1]	Sufficient	Total
Poor	(90) 125 *(29)*	(61) 313 *(71)*	(67) 438 *(100)*
Non-poor	(10) 14 *(6)*	(39) 203 *(94)*	(33) 217 *(100)*
Total	(100) 139 *(21)*	(100) 516 *(79)*	(100) 655 *(100)*

1. Household short of rice to eat for at least one month in the previous year.

Table A2.2. Household meat consumption by household income group: number of households (%)

Income group	Number of times meat eaten per month		
	0-7	8 +	Total
Poor	(76) 321 *(73)*	(50) 117 *(27)*	(67) 438 *(100)*
Non-poor	(24) 103 *(47)*	(50) 115 *(53)*	(33) 218 *(100)*
Total	(100) 424 *(65)*	(100) 232 *(35)*	(100) 656 *(100)*

Table A2.3. Household insufficiency of rice or infrequency of meat consumption as indicator of household poverty

Characteristics of indicator (%)	1992 (67% of households poor)		1996 (16% of households poor)	
	Rice short	Meat 0-7 times/month	Rice short	Meat 0-7 times/month
Sensitivity	29	73	29	73
Specificity	94	53	94	53
Positive predictive value	90	76	48	23
Negative predictive value	39	50	87	91

Table A2.4. Consultations and expenditure on ambulatory health care in households with illness episodes by household rice sufficiency

Rice sufficiency	Consultations/ ill person/year	Expenditure/ill person/year (dong '000)	Household expenditure as % household income
Short[1]			
• number of consultations/ episodes/ households	175	283	116
• mean (95% confidence interval)	2.17 (1.85-2.49)	65.8 (54.2-77.4)	21.1[2] (13.5-28.7)
• median	3.15	37.8	11.2
Sufficient			
• number of consultations/ episodes/ households	546	904	384
• mean (95% confidence interval)	2.04 (1.88-2.20)	75.2 (64.8-85.6)	10.7[2] (8.9-12.5)
• median	3.15	31.5	4.2
Total			
• number of consultations/ episodes/ households	721[3]	1188[3]	500[3]
• mean (95% confidence interval)	2.07 (1.93-2.21)	72.9 (64.5-81.3)	13.1 (10.9-15.3)
• median	3.15	31.5	4.8

1. Short of rice to eat for at least one month in the previous year.
2. Significantly different ($p<0.01$).
3. The numbers recorded from the total household sample undivided by income group.

Table A2.5. Consultations and expenditure on ambulatory health care in households with illness episodes by household meat consumption

Meat consumption per month	Consultations/ ill person/year	Expenditure/ill person/year (dong '000)	Household expenditure as % household income
0-7 times			
• number of consultations/ episodes/ households	453	776	322
• mean (95% confidence interval)	1.96[1] (1.78-2.14)	63.7[2] (56.3-71.1)	15.7[3] (12.4-19.0)
• median	0.00	31.5	6.7
8 + times			
• number of consultations/ episodes/ households	277	412	178
• mean (95% confidence interval)	2.27[1] (2.03-2.51)	90.3[2] (70.9-109.7)	8.5[3] (6.6-10.4)
• median	3.15	31.5	3.3
Total			
• number of consultations/ episodes/ households	730[4]	1188[4]	500[4]
• mean (95% confidence interval)	2.07 (1.93-2.21)	73.0 (64.6-81.4)	13.1 (10.8-15.4)
• median	3.15	31.5	4.8

1. Significantly different ($p<0.05$).
2. Significantly different ($p<0.01$).
3. Significantly different ($p<0.01$).
4. The numbers recorded from the total household sample undivided by income group.

ANNEX 3

MULTIVARIATE ANALYSIS OF INDIVIDUAL ILLNESS EPISODES

Variables are defined as follows:

days_ill>7	dummy variable: value 1 for illness episode with reported duration of more than 7 days, 0 for reported illness duration 1-7 days
non-poor	dummy variable: value 1 for non-poor household, 0 for poor household
mchild	dummy variable: value 1 for a male aged under 10 years, 0 for male aged 10 years or more
fchild	dummy variable: value 1 for a female aged under 10 years, 0 for male aged 10 years or more
fadult	dummy variable: value 1 for a female age 10 years or more, 0 for male aged 10 years or more
literate	dummy variable: value 1 where educational level of household head is literate only, 0 where household head is illiterate
grade 1-2	dummy variable: value 1 where household head attained grade 1 or 2 of schooling, 0 where household head is illiterate
grade 3+	dummy variable: value 1 where household head attained grade 3 or more of schooling, 0 where household head is illiterate
monthly hh income/capita	monthly household income per family member
cost_amb	cost of ambulatory care for illness episode

Predictors of household choice of ambulatory health care option

The multinomial logit model (Greene 1993) is intended for use when a dependent variable takes on more than two outcomes that are not assumed to have any natural ordering. In this case, the variable *first selected health care option outside of the home* is defined as having four possible outcomes: (1) OTC drug purchase (2) commune public consultation (3) private consultation (4) state hospital consultation. The aim of the model is to estimate the probability - or 'risk' - that an individual will select one of these outcomes over another, given the values of a set of potential explanatory variables. Solution requires specifying one of the possible outcomes, in this case outcome (1), as a 'base category' and calculating the 'relative risk ratio' (RRR) for the others. Thus the relative risk ratio for outcome (2) would be the probability of outcome (2) divided by the probability of outcome (1).

We start by showing the risk ratios for any consultation relative to OTC drug purchase and then the ratios for the three types of consultation separately.

Table A3.1 Multinomial regression for predictors of probability, relative to OTC purchase, that a first health care act would be a consultation with a health care provider

Any consultation: all episodes

```
Multinomial regression                                Number of obs =   1145
                                                      chi2(8)       =  44.06
                                                      Prob > chi2   = 0.0000
Log Likelihood = -771.52942                           Pseudo R2     = 0.0278

------------------------------------------------------------------------------
first act|        RRR   Std. Err.       z     P>|z|       [95% Conf. Interval]
---------+--------------------------------------------------------------------
consult. |
 >7 days |    1.87318   .2344054      5.016   0.000       1.465758     2.39385
non-poor |   1.382873   .1834835      2.443   0.015        1.06621    1.793586
  mchild |   1.058803   .2079863      0.291   0.771         .720459    1.556042
  fchild |   .7947801   .1548508     -1.179   0.238        .5425045    1.164369
  fadult |    .854417   .1231674     -1.091   0.275        .6441188    1.133375
literate |   .4539228   .1662342     -2.157   0.031        .2214408    .9304785
 grade1-2|   .5577617   .1716683     -1.897   0.058        .3051163    1.019605
 grade3+ |   .7939369   .2824117     -0.649   0.517        .3953709     1.59429
------------------------------------------------------------------------------
(Outcome first act: otc is the comparison group)
```

Consultations by provider

All episodes

```
Multinomial regression                                Number of obs =   1145
                                                      chi2(24)      = 140.83
                                                      Prob > chi2   = 0.0000
Log Likelihood = -1262.3741                           Pseudo R2     = 0.0528

------------------------------------------------------------------------------
first act|        RRR   Std. Err.       z     P>|z|       [95% Conf. Interval]
---------+--------------------------------------------------------------------
compublic|
 >7 days |   1.426667   .2008244      2.524   0.012       1.082688     1.87993
 non-poor|   1.356657   .2031287      2.037   0.042        1.01163    1.819358
  mchild |   1.481258   .3198112      1.820   0.069       .9701795    2.261568
  fchild |   1.001554   .2207374      0.007   0.994       .6502399    1.542676
  fadult |   .9780393   .1630678     -0.133   0.894        .705401    1.356053
literate |   .8431451   .3502969     -0.411   0.681       .3734721    1.903472
grade1-2 |   .7100822   .2579284     -0.943   0.346        .348434    1.447094
 grade3+ |   .7542071   .3178709     -0.669   0.503       .3301718    1.722825
---------+--------------------------------------------------------------------
private  |
 >7 days |   2.190669   .4297005      3.998   0.000       1.491466    3.217661
non-poor |   1.134352   .2292952      0.624   0.533        .763287    1.685806
  mchild |   .6569561   .2057516     -1.341   0.180       .3555897    1.213734
  fchild |    .674421   .1975793     -1.345   0.179       .3798061    1.197568
  fadult |   .7071125   .1492584     -1.642   0.101       .4675365    1.069452
literate |   .0763968   .0496549     -3.957   0.000       .0213712    .2731003
 grade12 |   .3318404   .1199928     -3.051   0.002       .1633565    .6740964
 grade3p |   .5547985   .2461301     -1.328   0.184       .2325462    1.323614
---------+--------------------------------------------------------------------
hospital |
 >7 days |   11.35561   4.833888      5.708   0.000        4.93025    26.15486
non-poor |   2.687522   .7415075      3.583   0.000       1.564946    4.615353
  mchild |   .2426581   .1457639     -2.357   0.018        .074762    .7876053
  fchild |   .2376185    .137082     -2.491   0.013       .0767048    .7361018
  fadult |   .6811321    .197743     -1.323   0.186       .3855802    1.203228
literate |   .4951177   .4617147     -0.754   0.451       .0796037    3.079526
 grade1-2|   1.351925   .9736291      0.419   0.675       .3295603    5.545883
 grade3+ |   6.263605   4.871898      2.359   0.018       1.363801    28.76722
------------------------------------------------------------------------------
(Outcome first act: otc is the comparison group)
```

Episodes excluding state workers

```
Multinomial regression                                  Number of obs =   1084
                                                        chi2(24)      = 126.69
                                                        Prob > chi2   = 0.0000
Log Likelihood = -1189.9778                             Pseudo R2     = 0.0505

------------------------------------------------------------------------------
first act|        RRR   Std. Err.       z     P>|z|       [95% Conf. Interval]
---------+--------------------------------------------------------------------
compublic|
  >7 days|   1.453249   .2105096      2.581   0.010       1.094057    1.930369
 non-poor|   1.369651   .2119164      2.033   0.042       1.011369    1.854856
  mchild |   1.601132   .3550633      2.123   0.034       1.036732    2.472792
  fchild |    1.09471   .2477924      0.400   0.689       .7024665    1.705973
  fadult |   .9964203   .1728401     -0.021   0.984       .7092385    1.399886
literate |    .840773   .3686215     -0.396   0.692       .3560288    1.985512
 grade1-2|   .6961738   .2701303     -0.933   0.351       .3254118    1.489368
 grade3+ |   .6758844   .3069808     -0.862   0.388       .2775007    1.646193
---------+--------------------------------------------------------------------
private  |
 >7 days |   2.210138   .4439156      3.948   0.000       1.490912    3.276324
non-poor |     1.1265   .2343737      0.573   0.567        .749264    1.693666
  mchild |    .660007   .2100959     -1.305   0.192        .353664    1.231704
  fchild |   .6807936   .2030457     -1.289   0.197       .3794423    1.221477
  fadult |   .6815833   .1479644     -1.766   0.077       .4453816    1.043051
literate |   .0682018   .0451049     -4.060   0.000       .0186577    .2493065
 grade1-2|   .2960746   .1110567     -3.245   0.001       .1419443    .6175675
 grade3+ |   .4652726    .218875     -1.626   0.104       .1850472    1.169856
---------+--------------------------------------------------------------------
hospital |
 >7 days |   9.980201   4.407371      5.210   0.000       4.199899     23.7159
non-poor |   2.700296   .7824688      3.428   0.001       1.530232    4.765026
  mchild |   .2228171   .1426508     -2.345   0.019       .0635326    .7814484
  fchild |   .2514081    .146214     -2.374   0.018       .0804151    .7859976
  fadult |   .5814024   .1772964     -1.778   0.075       .3198204    1.056933
literate |   .4465613   .4227341     -0.852   0.394       .0698389    2.855387
 grade1-2|   1.214492   .8932616      0.264   0.792       .2872992    5.133993
 grade3+ |   4.168191   3.404254      1.748   0.080       .8409158    20.66059
------------------------------------------------------------------------------
(Outcome first act: otc is the comparison group)
```

All episodes 1-7 days

```
Multinomial regression                                  Number of obs =    498
                                                        chi2(21)      =  38.89
                                                        Prob > chi2   = 0.0101
Log Likelihood = -471.48413                             Pseudo R2     = 0.0396

------------------------------------------------------------------------------
first act|        RRR   Std. Err.       z     P>|z|       [95% Conf. Interval]
---------+--------------------------------------------------------------------
compublic|
non-poor |   1.325274   .2913917      1.281   0.200       .8612901    2.039209
  mchild |   1.035044   .3044274      0.117   0.907        .581572    1.842105
  fchild |   .7300787   .2225958     -1.032   0.302       .4016469    1.327073
  fadult |   .7640903   .1958953     -1.050   0.294       .4622917    1.262913
literate |   .4473062    .448408     -0.803   0.422       .0627056    3.190826
 grade1-2|    .579319   .5401656     -0.585   0.558       .0931633     3.60239
 grade3+ |   .5864881   .5650119     -0.554   0.580        .088762    3.875175
---------+--------------------------------------------------------------------
private  |
non-poor |    1.57558   .5175929      1.384   0.166       .8275854    2.999634
  mchild |   1.051691   .5440609      0.097   0.922       .3815441    2.898891
  fchild |   1.657297   .7353176      1.139   0.255       .6946005    3.954263
  fadult |   1.226792   .5144578      0.487   0.626       .5392842     2.79077
literate |   .0331285    .036154     -3.122   0.002       .0039018    .2812807
 grade1-2|   .0619323     .04931     -3.494   0.000       .0130076    .2948745
 grade3+ |   .0821834   .0706099     -2.908   0.004       .0152564    .4427052
---------+--------------------------------------------------------------------
hospital |
non-poor |   5.206664   4.816475      1.784   0.074       .8494685    31.91331
  mchild |   .4899841   .5657274     -0.618   0.537       .0509799    4.709394
  fchild |   .3876115   .4469638     -0.822   0.411       .0404442    3.714813
  fadult |   .5205259   .5046034     -0.674   0.501       .0778536    3.480217
literate |   6.18e-08   2.624837      0.000   1.000              0           .
 grade1-2|   2.56e+07   4.44e+07      9.848   0.000       859221.6    7.64e+08
 grade3+ |   2.10e+08   3.84e+08     10.447   0.000        5757883    7.63e+09
------------------------------------------------------------------------------
(Outcome first act: otc is the comparison group)
```

All episodes >7 days

```
Multinomial regression                                  Number of obs =    646
                                                        chi2(21)      =  72.35
                                                        Prob > chi2   = 0.0000
Log Likelihood = -775.51009                             Pseudo R2     = 0.0446

------------------------------------------------------------------------------
first act|        RRR   Std. Err.       z     P>|z|       [95% Conf. Interval]
---------+--------------------------------------------------------------------
compublic|
non-poor |   1.326437   .2733918      1.371   0.170       .8856165    1.986679
  mchild |   2.120481   .6860857      2.323   0.020       1.124674    3.997995
  fchild |   1.283246   .4097275      0.781   0.435       .6863252     2.39933
  fadult |   1.190126   .2635132      0.786   0.432       .7711222    1.836804
literate |   1.120364    .528225      0.241   0.810       .4446697    2.822802
 grade1-2|     .73035   .2918357     -0.786   0.432       .3337376    1.598295
 grade3+ |   .8409723   .4671036     -0.312   0.755       .2831369    2.497853
---------+--------------------------------------------------------------------
private  |
non-poor |   .9879224   .2588704     -0.046   0.963       .5911234    1.651078
  mchild |   .6235017   .2631554     -1.119   0.263       .2726334    1.425923
  fchild |   .2904202   .1415383     -2.537   0.011       .1117347     .754859
  fadult |   .6354357   .1601095     -1.800   0.072       .3877894    1.041231
literate |   .0824161    .073124     -2.813   0.005       .0144804    .4690765
 grade1-2|   .5470016   .2298413     -1.436   0.151       .2400642    1.246378
 grade3+ |   1.200068    .695867      0.315   0.753       .3851512    3.739215
---------+--------------------------------------------------------------------
hospital |
non-poor |   2.393212   .7189877      2.905   0.004       1.328178    4.312269
  mchild |   .2222734   .1607692     -2.079   0.038        .053854    .9173969
  fchild |    .196732   .1338612     -2.390   0.017       .0518438    .7465403
  fadult |   .7186825   .2232552     -1.063   0.288       .3909449     1.32117
literate |    .661516   .6233269     -0.439   0.661       .1043466    4.193748
 grade1-2|   1.622383   1.176546      0.667   0.505       .3916206    6.721114
 grade3+ |   7.283888   5.986888      2.416   0.016       1.454555    36.47508
------------------------------------------------------------------------------
(Outcome first act: otc is the comparison group)
```

Predictors of household ambulatory health care expenditure per illness episode

The multiple linear regression model used assumes the following form:

cost_amb = a + b1.mchild + b2.fchild + b3.fadult + b4.literate + b5.grade1-2 + b6.grade3 + b7.monthly hh income/capita + b8.days_ill >7

The coefficients b2, b3 and b4 show respectively the increased cost of an episode for a male child, a female child or a female adult compared to the cost for a male adult. The coefficients b5, b6 and b7 similarly show respectively the increased cost for an individual from a household where the head is literate (only), has attained grade 1 or 2 of schooling, or has attained grade 3 or more of schooling, compared to the cost for an individual from a household with an illiterate head. Coefficient b8 shows the increased cost for an episode of more than 7 days duration compared to one of up to 7 days.

Table A3.2 Multiple linear regression for predictors of household ambulatory health care expenditure per illness episode

All episodes

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.283	.080	.074	40913.33

a Predictors: (constant), mchild, fchild, fadult, literate only, grade 1-2, grade 3+, monthly hh income/capita, days_ill >7

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	167435350481.521	8	20929418810.190	12.503	.000
	Residual	1928360812099.537	1152	1673900697.937		
	Total	2095796162581.057	1160			

a Predictors: (constant), mchild, fchild, fadult, literate only, grade 1-2, grade 3+, monthly hh income/capita, days_ill >7

b Dependent variable: cost_amb

Coefficients

		Unstandardised Coefficients		Standardised Coefficients	t	Sig.
Model		B	Std. Error	Beta		
1	(constant)	5798.548	6379.363		.909	.364
	mchild	-1845.210	3933.477	-.015	-.469	.639
	fchild	-10056.363	3901.778	-.083	-2.577	.010
	fadult	-3093.826	2861.541	-.036	-1.081	.280
	literate	5701.407	7113.333	.036	.802	.423
	grade1-2	3751.454	5887.808	.038	.637	.524
	grade3+	-775.394	6815.695	-.006	-.114	.909
	monthly hh income/capita	9.092E-02	.023	.114	3.943	.000
	days_ill >7	20536.572	2494.616	.239	8.232	.000

a Dependent variable: cost_amb

All episodes 1-7 days

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.146	.021	.007	14006.93

a Predictors: (constant), mchild, fchild, fadult, literate only, grade 1-2, grade 3+, monthly hh income/capita

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2083236711.583	7	297605244.512	1.517	.159
	Residual	95902303426.063	489	196194090.138		
	Total	97985540137.646	496			

a Predictors: (constant), mchild, fchild, fadult, literate only, grade 1-2, grade 3+, monthly hh income/capita

b Dependent variable: cost_amb

Coefficients

		Unstandardised Coefficients		Standardised Coefficients	t	Sig.
Model		B	Std. Error	Beta		
1	(constant)	11382.971	4383.827		2.597	.010
	mchild	2917.177	1904.940	.081	1.531	.126
	fchild	-1865.518	1874.358	-.053	-.995	.320
	fadult	-903.484	1614.709	-.031	-.560	.576
	literate	-415.440	4948.162	-.007	-.084	.933
	grade1-2	-2495.390	4373.647	-.077	-.571	.569
	grade3+	-4044.734	4624.235	-.105	-.875	.382
	monthly hh income/capita	2.319E-02	.012	.088	1.871	.062

a Dependent variable: cost_amb

All episodes >7 days

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.178	.032	.021	52539.53

a Predictors: (constant), mchild, fchild, fadult, literate only, grade 1-2, grade 3+, monthly hh income/capita

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	59092774470.250	7	8441824924.321	3.058	.004
	Residual	1811383523980.804	656	2760401843.215		
	Total	1870476298451.054	663			

a Predictors: (constant), mchild, fchild, fadult, literate only, grade 1-2, grade 3+, monthly hh income/capita

b Dependent variable: cost_amb

Coefficients

		Unstandardised Coefficients		Standardised Coefficients	t	Sig.
Model		B	Std. Error	Beta		
1	(constant)	22410.462	8988.262		2.493	.013
	mchild	-5604.007	7285.874	-.032	-.769	.442
	fchild	-19715.151	7314.665	-.113	-2.695	.007
	fadult	-4206.232	4638.277	-.039	-.907	.365
	literate	8865.569	10716.046	.047	.827	.408
	grade1-2	7941.488	8591.857	.063	.924	.356
	grade3+	2052.644	11049.047	.010	.186	.853
	monthly hh income/capita	.139	.039	.140	3.586	.000

a Dependent variable: cost_amb

All episodes excluding state workers

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.281	.079	.072	41523.58

a Predictors: (constant), mchild, fchild, fadult, literate only, grade 1-2, grade 3+, monthly hh income/capita, days_ill >7

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	164062427838.384	8	20507803479.798	11.894	.000
	Residual	1912828666001.157	1109	1724207580.979		
	Total	2076891093839.541	1117			

a Predictors: (constant), mchild, fchild, fadult, literate only, grade 1-2, grade 3+, monthly hh income/capita, days_ill >7

b Dependent variable: cost_amb

Coefficients

		Unstandardised Coefficients		Standardised Coefficients	t	Sig.
Model		B	Std. Error	Beta		
1	(constant)	7181.483	6666.358		1.077	.282
	mchild	-1991.959	4044.786	-.016	-.492	.622
	fchild	-10362.807	4016.045	-.085	-2.580	.010
	fadult	-3015.624	2977.538	-.034	-1.013	.311
	literate	4340.974	7399.109	.028	.587	.558
	grade1-2	2354.157	6186.815	.023	.381	.704
	grade3+	-1421.043	7302.521	-.010	-.195	.846
	monthly hh income/capita	9.227E-02	.024	.116	3.897	.000
	days_ill >7	20555.260	2579.073	.236	7.970	.000

a Dependent variable: cost_amb

Episodes 1-7 days excluding state workers

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.148	.022	.007	14233.80

a Predictors: (constant), mchild, fchild, fadult, literate only, grade 1-2, grade 3+, monthly hh income/capita

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2113568756.194	7	301938393.742	1.490	.168
	Residual	94960573620.598	469	202601109.077		
	Total	97074142376.792	476			

a Predictors: (constant), mchild, fchild, fadult, literate only, grade 1-2, grade 3+, monthly hh income/capita

b Dependent variable: cost_amb

Coefficients

		Unstandardised Coefficients		Standardised Coefficients	t	Sig.
Model		B	Std. Error	Beta		
1	(constant)	11388.189	4460.824		2.553	.011
	mchild	2713.915	1967.009	.075	1.380	.168
	fchild	-2071.970	1947.383	-.058	-1.064	.288
	fadult	-997.911	1693.386	-.033	-.589	.556
	literate	-408.062	5029.938	-.007	-.081	.935
	grade1-2	-2367.571	4447.196	-.070	-.532	.595
	grade3+	-4051.601	4771.038	-.099	-.849	.396
	monthly hh income/capita	2.531E-02	.013	.095	1.962	.050

a Dependent variable: cost_amb

Episodes >7 days excluding state workers

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.177	.031	.021	53263.28

a Predictors: (constant), mchild, fchild, fadult, literate only, grade 1-2, grade 3+, monthly hh income/capita

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	58398646325.009	7	8342663760.716	2.941	.005
	Residual	1797760436573.759	634	2836977119.266		
	Total	1856159082898.768	641			

a Predictors: (constant), mchild, fchild, fadult, literate only, grade 1-2, grade 3+, monthly hh income/capita

b Dependent variable: cost_amb

Coefficients

		Unstandardised Coefficients		Standardised Coefficients	t	Sig.
Model		B	Std. Error	Beta		
1	(constant)	23870.585	9470.666		2.520	.012
	mchild	-5816.483	7476.281	-.033	-.778	.437
	fchild	-19948.444	7463.545	-.114	-2.673	.008
	fadult	-4001.418	4801.165	-.037	-.833	.405
	literate	7503.863	11185.091	.040	.671	.503
	grade1-2	6355.483	9101.935	.049	.698	.485
	grade3+	2886.597	12035.063	.014	.240	.811
	monthly hh income/capita	.139	.039	.140	3.518	.000

a Dependent variable: cost_amb