# Cost recovery in Ghana: are there any changes in health care seeking behaviour?

W K ASENSO-OKYERE, ADOTE ANUM, ISAAC OSEI-AKOTO AND AUGUSTINA ADUKONU Institute of Statistical, Social and Economic Research (ISSER), University of Ghana, Legon, Ghana

The study aimed to investigate the impact on health care seeking behaviour of the cost-sharing policies introduced in Ghana between 1985 and 1992. Qualitative research techniques were used to investigate the behaviour of patients after the introduction of these policies. Focus group discussions of cohorts of the population and in-depth interviews of health workers and selected opinion leaders were used to collect data from rural and urban health care facilities in three districts of Ghana.

The study findings indicate that the cost recovery policies have led to an increase in self-medication and other behaviours aimed at cost-saving. At the same time, there is a perception of an improvement in the drug supply situation and general health delivery in government facilities. The study advocated enhanced training of drug peddlers and attendants at drug stores, especially in rural areas. User fee exemption criteria need to be worked out properly and implemented so that the very needy are not precluded from seeking health care at hospitals and clinics.

#### Introduction

Many countries in sub-Saharan Africa adopted Structural Adjustment as the tenet of economic development in the 1980s. In most of these countries the policies have included the introduction of cost recovery in the social sectors of health and education in the form of user charges or fees. There has been considerable research to assess the impact of these policies on the health care seeking behaviour of people. Many of these studies have concluded that access to health care is generally reduced, especially during the initial stages of implementing the cost sharing measures (for example, see Waddington and Enyimayew 1989; Knauth 1991; Biritwum 1993; Asenso-Okyere 1995).

In some cases, however, this reduction has been limited or may not occur if people perceive the increased costs to be associated with improvements in the quality of the services provided, like availability of drugs or quality of care (Lavy and Germain 1995; Mwabu et al. 1995). Utilization rates may increase in some situations. For instance, after the introduction of full cost recovery for drugs in government health facilities in Ghana in 1992, which was accompanied

by improvements in the supply of drugs, total out patient attendance increased from 4 478 693 in 1992 to 4 828 501 in 1995, an increase of 3.5% (Table 1). This increase was observed for all age groups.

The research behind this paper was motivated by the need to find out how people change their health care seeking behaviour when they or members of their households fall sick, in the light of the increasing cost of medical care in Ghana. This cost increase is the result of changes in the health care financing scheme introduced under the Hospital Fees Legislation (1985) and the 'Cash and Carry' system which began in 1992. Under the two policies, patients pay partly for consultations and diagnostic procedures, and fully for drugs supplied. Through the cash and carry policy, public health facilities can finance drug purchases for their hospitals and clinics under a revolving fund scheme. Under the policy, pharmacies at health facilities require that payment is made before drugs are supplied to patients. It is only when an individual is declared a pauper that they may be exempted from charges, but this is seldom done because of difficulties in identification and problems of obtaining refunds from the government.

Table 1. Outpatient attendance by age group, Ghana, 1990-1995\*

Age (years)	1990	1991	1992	1994	1995
Jnder 1	554 058	444 171	479 090	487 950	476 132
1-4	763 714	974 919	716 911	778 691	757 654
5–14	674 091	630 906	628 636	699 677	717 899
5-44	1 851 026	1 817 332	1 918 675	2 046 504	2 043 504
5-59	953 526	491 340	501 984	517 982	540 802
60+	206 472	207 629	233 397	267 595	292 510
<b>Total</b>	5 002 887	4 563 297	4 478 693	4 798 399	4 828 501

Source: Health Statistics Unit, Ministry of Health, Ghana

This problem of exemption is not peculiar to Ghana. Shaw (1996) also reported that exemptions due to poverty or inability to pay were uncommon in sub-Saharan Africa. He reported that of 25 countries only one has an official income ceiling below which people are exempt; 14 countries have exemptions that are part of national health policy but without any clear criteria; the remaining 10 countries provide exemptions as part of local projects or facilities, with criteria determined on an ad hoc or community-bycommunity basis. Of 27 sub-Saharan African countries with some kind of national system of user fees in place, about one-third see revenue mobilization as their primary objective. The remaining two-thirds emphasize improvements in primary health services, such as staff incentives or drug availability, as the primary objective of user fees (Shaw 1996).

The major objective of this paper is to ascertain whether there was a change in the health care seeking behaviour of people, and also whether patients perceived a change in the quality of health care, following the introduction of user charges and the cash and carry system. Specifically, the paper will

identify how households believe the change in the health care financing system has influenced their treatment seeking behaviour. Issues to be explored include changes in choice of provider and delay in reporting at health care facilities after onset of illness. The perceived reasons behind any changes were investigated.

# Methodology

The study was conducted in three districts in three different regions of Ghana: Amansie East in the Ashanti Region, Awutu-Efutu-Senya in the Central Region, and Kwaebibirem in the Eastern Region. In each district an urban area and a rural area with government and private health care facilities were selected. Data were obtained through qualitative research techniques using focus group discussions and in-depth interviews. A question guide for the focus group discussion was designed and tested in the Ga District which has similar characteristics to the three study districts. For each selected area, five different cohorts of people were identified and engaged in the focus group discussions. These were: 1) adult males,

<sup>\* 1993</sup> figures are absent because the data is not complete.

20-40 years of age; 2) adult females, 20-40 years of age; 3) adult males, 41-60 years of age; 4) adult females, 41-60 years of age; and 5) elderly (over 60 years of age).

Separate focus group discussions were held with nurses at each of the health facilities in the selected areas. Each focus group had seven to nine participants, and a total of 36 focus group discussions were held. The focus group discussions were led by a moderator and another member of the research team took notes. After each discussion, the participants were served with soft drinks during which time informal discussions were held about general health care.

Focus group discussions were used as the main source of data to enable respondents to debate some of the controversial issues and arrive at a group consensus. However, dissenting views were not ignored in the analysis. Since focus group discussions collect information at a general level and do not present individual data on behavioural changes, care must be taken in using results from such sources for policy (Dawson et al. 1993).

In-depth interviews were held with prescribers (doctors or medical assistants) and pharmacists or dispensary assistants. A selected number of community leaders were also interviewed. These were identified with the help of the chief of the community. All interviews and discussions were recorded on audio tapes in the field and later transcribed. The transcribed data were entered into the computer as a text file using WordPerfect software. The analyses of the results were carried out using Textbase Alpha after converting the text file into ASCII.

#### Results and discussion

#### Major diseases in the communities

General information was sought on major diseases and common methods of treatment during focus group discussions and in-depth interviews. The major diseases in the survey area are presented in Table 2.

Agyepong (1992) and Agyepong and Manderson (1994) report that residents in both rural and urban Ghana use fever as the predominant term for malaria. As in those two papers, fever in this paper is also understood to be a local term for a set of symptoms

that approximate the bio-medical disease defined clinically as malaria. Fever or malaria was mentioned by focus groups as the most important disease in all the communities surveyed. This compares with earlier reports that malaria accounts for about 9% of deaths, 30% of outpatient visits and 9% of hospital admissions in Ghana (Asenso-Okyere 1994). Epidemiological data also reveal that malaria is the disease most often reported at health facilities in Ghana (Table 2). After malaria, diarrhoea was the next most important disease to most of the study participants. This is also supported by epidemiological data for 1991 and 1992, although in 1995 upper respiratory infections were the second most prevalent diseases reported at health facilities. Women were more concerned with diseases of children like measles and respiratory tract infections, while the aged seemed to be more worried by diseases associated with old age such as rheumatism, stroke and eye problems.

#### Health care provision

The communities surveyed have both orthodox ('modern') and traditional health care facilities, both of which are patronized by the sick. In each district, especially in urban communities, there are both private and government facilities. The traditional health care providers include herbalists and fetish priests.

Self-medication or self-prescription is widespread among all classes of people. Asenso-Okyere and Dzator (1995) found that self-medication was the first choice of treatment for 65.8%, 69.1% and 58.9% of children, adult males and adult females respectively, when they contracted mild fever. In the case of babies, 57.0% of their caretakers, usually their mothers, give treatment to the infants before seeking alternative care (Asenso-Okyere and Dzator 1995). While the aged were more likely to use herbs, younger people usually used pharmaceutical preparations. There were also some gender differences; for example, more females than males preferred the use of herbs to drugs when they were self-medicating. Children are seldom treated by herbal practitioners (Wondergem et al. 1989).

People acquired knowledge of disease treatment from previous illnesses or through neighbours, and when they or other members of their household became sick with a similar condition, the same treatment method was applied (Wondergem et al. 1989). Sometimes drugs left over from a previous episode of a disease

Table 2. Major diseases in the survey area by district and top ten diseases reported at health facilities in Ghana, 1995

Amansie East	Awutu-Efutu-Senya	Kwaebibirem	*Epidemiological data, 1993
fever/malaria	fever/malaria	fever/malaria	malaria
diarrhoea	cholera/diarrhoea	diarrhoea	upper respiratory infection
cough	cough	schistosomiasis	skin diseases
anaemia	measles	anaemia	diarrhoeal
skin rashes	stroke	hypertension	accidents
schistosomiasis	jaundice	gonorrhoea	pregnancy related complications
stomach ache	stomach ache	cough	gynaecological diseases
eye problems	scabies/worms	stomach ache	acute eye infection
	measles ·		hypertension
			rheumatism and joint pains

Source: Revealed by focus group discussants during survey

were used. Herbs were used to treat disease in Ghana long before the advent of modern, cosmopolitan medicine, and every household has some knowledge about the use of herbs. The most common knowledge about herbal treatment is for malaria/fever, where the leaves of the 'neem' tree (Azadirachta indica) have been used successfully. Many of the elderly (over 60 years) and some of the 41–60 year old female discussants knew of one or two herbal preparations for the treatment of malaria/fever. The elderly age group were emphatic about the potency of herbs to treat disease.

Even so, many people would like to visit a clinic when ill, if there were no constraints. For some who self-medicated, if the condition did not improve after some time, they would visit a clinic. At other times, to avoid multiple payment of consultation fees if more than one member of the household were sick, one would report to the clinic and all the sick persons would share the prescribed drugs when they were purchased. When a patient was not cured after attending a clinic, they would return to self-medication or visit other providers.

In most rural communities the only contact inhabitants have with orthodox medication is through untrained, semi-literate drug peddlers who move from one village to another to sell drugs and sometimes give injections. If the patient does not know which drug to buy for the illness, the drug peddler will make a diagnosis and suggest appropriate medication.

Asenso-Okyere and Dzator (1997) have reported that for several reasons – including availability, convenience, quick service and non-payment of

<sup>\*</sup>Top ten diseases reported at health facilities, 1994; Source: Health Statistics Unit, Ministry of Health, Ghana

consultation fees – patronage of drug stores and pharmacy shops is increasing in both urban and rural communities. In response to the liberalized trade policies of Ghana, most drugs designated as essential drugs by the Ministry of Health are now readily available on the open market, and patients have greater access to them because of the flexible hours of operation of many drug stores. Some respondents reported that drug store operators even offered credit facilities to certain customers. When the patient did not know the kind of drug to purchase, he or she would consult the pharmacist or store attendant who would then suggest the appropriate medication. Some drug stores also provided dressing services for cuts and abrasions.

Asenso-Okyere et al. (1997) found that 22% of male adults and 47% of female adults had made consultations at drug stores when they contracted malaria/fever. In this study, a large number of patients visited traditional healers if they were unsuccessful in obtaining a cure from orthodox practitioners. However, there were also some instances of first visits to fetish priests and herbalists, especially when the cause of illness was perceived to be supernatural, as in the case of epileptic fits or boils (abscesses). A community leader and some health workers in one district reported that because of the belief that every disease has a spiritual cause, many people consulted a fetish priest when they or members of their family were sick, before they attempted any other form of treatment. Initial consultation with a fetish priest may also occur because they are closer to the patients in terms of distance and culture, and may be less expensive than orthodox providers.

Faith healing involving prayers and fasting has also become a popular form of healing in Ghana, especially among women and children (Asenso-Okyere 1994). It was therefore not surprising when the women stressed the healing powers of the spiritualists, while some men seemed to be sceptical about their efficacy.

#### Choosing a health care provider

The decision as to where to seek health care depends upon many factors including the availability of a provider within the community, the proximity of the provider, reputation of the provider, perceived quality of the services, the perceived cause of the disease, the cost of treatment, and the arrangements for payment.

Cost of orthodox health care is increasingly becoming a hindrance to many health care seekers, leading them to look at alternative providers. For instance, the average cost of treating malaria, including the direct costs and the opportunity costs of travel and waiting time, amounted to 3.7 days of male output and 4.7 days of female output (Asenso-Okyere and Dzator 1997). Drug peddlers and drug store operators provide services which are closer to the people and may be cheaper than services from regular health care providers because of non-payment of consultation fees and transport expenses. They offer treatment for common ailments like fever, diarrhoea, headache and stomach ache. In one rural facility in the study area, health workers believed that patients attempted initial treatment by buying drugs from the drug stores and reported to the health centre only if the condition became worse. At a second facility, the nurses thought that people patronized the drug stores in order to avoid the payment of hospital fees.

The focus group discussions revealed that despite complaints about the services and attitudes of health workers, a large number of disease cases did present to government hospitals and clinics. In 1995, for instance, 3 267 059 cases of the top ten diseases were reported at health facilities, in a population of 17.5 million. Though this pattern conflicts with complaints about high user charges and drug costs, other reasons explain the preference for hospital and clinics. The presence of qualified personnel such as doctors and medical assistants, and laboratory services for better diagnoses and injection as part of therapy, were major attractions of hospitals and clinics. People also thought that the risk of being sold expired drugs was lower at hospitals and clinics. The implication is that patients associated availability of these services with quality of care at orthodox facilities (see also Waddington and Enyimayew 1989; Asenso-Okyere et al. 1996).

Although user charges may have some impact on attendance, any adverse impact may be reduced if the charges were perceived to be associated with improvements in the quality of the services. Most people mentioned good services, and specifically availability of drugs, as a prime motivator for hospital attendance. Patients are attracted to these facilities despite the keen competition from private facilities and other providers, as the following personal communication from a prescriber indicates:

'When the user fee system was first implemented attendance fell. But later it started picking up and now I think it has picked up to pre-fees level. In terms of drug charges, I do not think it has had much effect because the private facilities also provide drugs which the patients pay for. What at times puts them off is the fact that sometimes we run short of drugs and the patients have to buy them from outside. However, this is not our fault. We depend mainly on the government-owned medical stores for our drug supply and we do not get everything we need from them.'

Many participants referred to the shortage of drugs at government health care facilities. They found it difficult to understand why one could pay so much money at the hospital and yet still be asked to buy drugs from private pharmacy shops.

In one district, participants preferred to go to a nearby mission clinic, where charges were relatively higher than the government facilities, because they felt services were better and drugs were always available. Although most private hospitals do not provide all the services available at government health centres (for example, laboratory service), some participants preferred to seek treatment at private hospitals because of a perceived higher quality, such as promptness in the services provided and the warm reception they received from the health workers. One discussant remarked that '... you go in, make one payment and that covers all the services you need, unlike the government hospitals where you have to pay something at every station and yet they are not able to provide all the drugs prescribed after spending so much time there.'

The use of herbal medical practitioners is widespread among all age groups and for both sexes. Traditional medical practitioners were preferred for a number of reasons: 'they have patience with us. The herbalist has time to treat us well, unlike the hospital where the doctor starts writing a prescription as soon as you begin talking about your illness.' For some discussants, inability to pay user fees at the orthodox health care facilities also influences their use of herbalists, who have more convenient terms of payment, varying from receiving payments in-kind to payments in instalments. In some cases the patients would be admitted and fed by the traditional healer for the whole period of treatment. The herbalist would only ask for a 'thank you' after the patient has been discharged.

## Delays in attending clinic

Cost seems to be a major deterrent to many people who would like to attend a clinic. In one rural

community surveyed a woman whose child had severe diarrhoea could not take the child to the health centre because she could not afford hospital bills. There was a similar incident in another rural community of a child who had convulsions. The sick child was being treated with herbs because of the parents' inability to pay the user charges or buy drugs from the hospital which was only five kilometres away. In both cases, when the research team offered to pay for the cost of the treatment, the child was sent to the hospital.

Almost all participants in the focus group discussions, and some participants from the in-depth interviews, believed that cost of treatment hindered people from reporting sickness to the hospital early. The implication of the delay is that when the disease is reported, it may require more specialized care which may be more expensive. Participants referred not only to hospital charges but also to other direct costs like transportation for those a long distance from clinics. In many rural areas, health care facilities are strategically located to serve a number of villages which may not necessarily be located very close to each other. Length of delays were often associated with the degree of severity of the illness and in other cases on how soon financial help could be obtained from a relative or a friend. Waiting for three or more days before going to a clinic seemed to be very common.

Conditions such as convulsions, cholera, diarrhoea and severe injuries considered to be emergency cases are sent to the hospital immediately. All participants agreed that there was no point in waiting for such conditions. This underscores participants' confidence in the orthodox health care system, despite the hardships that the policy of cost sharing has brought to them. However, diseases like mild fever and schistosomiasis were not reported immediately and alternative treatments were sought. With a fever, for example, only when the patient had severe loss of appetite and convulsions were attempts made to visit the health care facility. In an earlier focus group study, most participants reported that contraction of schistosomiasis was part of life (especially among the youth) and so they did not bother to go to the clinic until the passage of blood became very intense and micturition became extremely painful (Asenso-Okyere 1992). Similar views were expressed in this study.

Though costs have been frequently reported to be one of the major causes of delay, the belief in the supernatural causes of illness is another significant factor. Some revealed that they spent a great deal of time seeking the cause of disease and possible treatment before reporting to the hospitals. Many participants felt that this was important for conditions considered spiritual in origin and therefore needing spiritual treatment. According to a senior medical officer, the delays in reporting sicknesses to the clinic had more to do with superstition than lack of money. He said delays were not new and that they had existed even before user charges were introduced. In his words:

'Even when they were not paying, there was delay till sometimes the illness was in the terminal stages or had become critical . . . That is their nature. It may be due to ignorance and superstition.'

In an era of escalating health care costs and dwindling per capita resources, it may not be possible to send all sick household members at the same time to a health care provider. Sometimes a choice is made to send one while another has to wait. In this study, when different members of a household were ill simultaneously and financial resources were limited, the child generally was more likely to be sent to a clinic than an adult. This is both because children are less able to withstand the painful effects of disease than adults and because a child may not be able to describe accurately the symptoms of a disease to enable self-medication to be tried, so expert advice has to be sought. In addition, when the child's illness becomes serious, an adult has to stop carrying out her/his economic activities to provide care. This makes it more expensive and therefore immediate care would be given to a child to avert a more serious situation. However, epidemiological data do not fully support this finding as the proportion of children (less than 15 years) attending outpatient clinics has fallen relative to adults from 1992 to 1995 (Table 1).

When a husband and wife are both sick, it is more likely that the wife would be the first to be sent to a clinic or hospital; both males and females agreed that it is the responsibility of the man to care for his wife in marriage. They also agreed that because of the many chores women undertake in the household, a healthy wife was better able to care for the rest of the household than a healthy husband. Men are expected to ensure that their wives are in good health. However, factors such as whether the household depends on subsistence production or wage income, the socioeconomic status of the wife, the number of

wives of the man and the age/gender composition of the household members may be more important than just conforming to social norms and expectations.

#### Conclusions

Health care seekers use several strategies to cope with the cost of care. It is not clear if these strategies were already in practice before the introduction of user charges in Ghana. Although most people would prefer to attend orthodox clinics, they report that they have been restrained by the high user charges and the cost of drugs. Consequently, as reported by Asenso-Okyere et al. (1997), self-medication is widespread. In addition to 'wait-and-see' strategies, where people expect their illnesses to be self-limiting, people resort to self-medication to avoid user charges and transportation costs to and from health care facilities.

Where knowledge about appropriate medication is limited, advice is sought from drug store operators on what to purchase for a particular illness. This has led to longer delays in reporting diseases to hospitals and clinics.

The preference for non-orthodox medicine does not occur through cost considerations alone. The liberal trade and payments policies of the government, coupled with the 'cash and carry' system, have improved the supply of drugs at health care facilities. This development is seen to enhance the quality of health care in the country.

Though it was generally believed that the prices of drugs at government facilities were lower than those at private clinics and stores, people were willing to attend private clinics because drugs were always available. The possibility of obtaining all the prescribed drugs at government clinics was therefore advocated by many focus group discussants. This implies that the occasional shortages of drugs at government facilities should be assessed. At the very least, government health care facilities should have adequate amounts of drugs designated as essential by the Ministry of Health so that patients can obtain all their prescription drugs at the health facility they visit.

The Ghana Pharmacy Board has begun periodic training of drug peddlers and drug store keepers in rural areas to improve their knowledge of drugs for treatment of common diseases like malaria. This is a positive development which will go a long way to

improve rural health care delivery since most rural inhabitants purchase drugs from these people.

Although cost of services appears to preclude access to clinics and hospitals or cause undue delay, traditional beliefs are still an important reason for the choice of fetish priests and spiritualists for the treatment of diseases when patients attribute supernatural causes to their illness. The consequence of such beliefs is that diseases may be reported to the clinics and hospitals only when they cannot be handled by these orthodox providers and are in their advanced stages.

#### References

- Agyepong IA. 1992. Malaria. Ethnomedical perceptions and practice in Adangbe farming community and implications for control. Social Science and Medicine 35(2): 131-7.
- Agyepong IA and Manderson L. 1994. The diagnosis and management of fever at household level in the Greater Accra region, Ghana. Acta Tropica 58: 317-30.
- Asenso-Okyere WK. 1995. Financing Health Care in Ghana. World Health Forum 16: 86-91.
- Asenso-Okyere WK. 1994. Socio-economic Aspects of Malaria. Health Social Sciences Research Unit, Monograph Series No. 3, Institute of Statistical, Social and Economic Research, University of Ghana.
- Asenso-Okyere WK. 1992. Disease and Health in Four Selected Areas in Ghana with Special Reference to Malaria and Schistosomiasis. Health Social Sciences Research Unit, Monograph Series No. 1, Institute of Statistical, Social and Economic Research, University of Ghana.
- Asenso-Okyere WK and Dzator J. 1997. Household cost of seeking malaria care: A retrospective study of two districts in Ghana. Social Science and Medicine 45(5): 659-67.
- Asenso-Okyere WK, Dzator JA and Osei-Akoto I. 1997. The behaviour towards malaria care A multi-nomial logit approach. Social Indicators Research 39: 167-86.
- Biritwum RB. 1993. Health services: Utilization pattern at a medical school clinic. In: AK Obeng (Ed.) An Annotated Bibliography on the Access, Coverage, and Utilization of Health Care Services and Health Care Seeking Behaviour in Ghana, 1983–1993.
- Ministry of Health. 1992. Cash and Carry Scheme: Guidelines of a system design for the study of the Essential Drugs. Ministry of Health, Ghana.
- Dawson S, Manderson L and Tallo VL. 1993. A manual for the use of focus groups. International Nutrition Foundation for Developing Countries (INFDC), Boston.
- Knauth JC. 1991. Experiences with Revolving Drug Funds at two health centres in Kumansi, Ghana, up to the introduction of the cash and carry system. (unpublished Masters thesis).

- Lavy V and Germain J. 1995. Tradeoffs in Cost, Quality and Accessibility in Utilisation of Health Facilities: Insight from Ghana. In: Shaw RP and Ainsworth M (Eds.) Financing Health Services through User Fees and Insurance. Case Studies from Sub-Saharan Africa. World Bank Discussion Paper No. 294, African Technical Department, World Bank, Washington DC.
- Mwabu G, Ainsworth M and Nyamete A. 1995. The effect of prices, service quality and availability on demand for medical care: Insights from Kenya. In: Shaw RP and Ainsworth M (Eds.) Financing Health Services through User Fees and Insurance. Case Studies from Sub-Saharan Africa. World Bank Discussion Paper No. 294, African Technical Department, World Bank, Washington DC.
- Shaw RP. 1996. User fees in sub-Saharan Africa: Aims, findings, policy implications. In: Shaw RP and Ainsworth M (eds.) Financing Health Services Through User Fees and Insurance. Case Studies from Sub-Saharan Africa. World Bank Discussion Paper No. 294, African Technical Department, World Bank, Washington DC.
- Waddington CJ and Enyimayew KA. 1989. A price to pay: The impact of user charges in Ashanti Akim District of Ghana. International Journal of Health Planning and Management 4: 17-47.
- Wondergem P, Senah KA and Glover EK. 1989. Herbal Drugs in Primary Health Care (PHC). Ghana: An Assessment of the Relevance of Herbal Drugs in PHC and Some Suggestions for Strengthening PHC. Amsterdam: Koninklijk Instituut voor de Tropen (Royal Tropical Institute).

## **Acknowledgement**

This investigation received financial support from the UNDP/World Bank/TDR Special Programme of Research and Training in Tropical Diseases.

# **Biographies**

W Kwado Asenso-Okyere is the Acting Director and Principal Investigator of the Health Social Sciences Unit at the Institute of Statistical, Social and Economic Research, University of Ghana, Legon.

Isaac Osei-Akoto is a Senior Research Assistant at the Health Social Sciences Unit at the Institute of Statistical, Social and Economic Research, University of Ghana, Legon.

Adote Anum is a Senior Research Assistant at the Health Social Sciences Unit at the Institute of Statistical, Social and Economic Research, University of Ghana, Legon.

Augustina Adukonu is a Senior Research Assistant at the Health Social Sciences Unit at the Institute of Statistical, Social and Economic Research, University of Ghana, Legon.

Correspondence: Dr W K Asenso-Okyere, Health Social Sciences Unit, Institute of Statistical, Social and Economic Research, University of Ghana, PO Box 74, Legon, Ghana.