

FINAL REPORT

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◆ **TITLE:** Informal Health Markets
and Formal Health Financing Policy

◆ **PROJECT LEADER:** B. McPake

◆ **HOST INSTITUTION:** London
School of Hygiene and Tropical
Medicine

◆ **ADDRESS:** Keppel Street,
London WC1E 7HT

◆ **TELEPHONE:** (171) 927 2267

◆ **TELEX:** 8953474

◆ **COUNTRIES/
INSTITUTIONS** **ASSOCIATED** Uganda:
Makerere Institute of Social Research
Ministry of Health
The Netherlands:
Royal Tropical Institute

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Summary

This is a study of health service delivery in the situation in which public health workers are extensively engaged in a range of 'socio-economic survival strategies'. Following Uganda's political and economic collapse, much has been done in the last decade to rehabilitate infrastructure and to strengthen drug supply but health workers have been largely excluded.

The objectives of the research were (1) To identify and describe the socio-economic survival strategies; (2) To examine the implications of different strategies on the public health system in terms of accessibility and quality of care, and health workers' motivation and standard of living; (3) To explain health workers' choice of strategy (4) To model the implications of alternative health financing policy and other policy options; (5) to explore the external activities of public health workers with respect to their associated living standards; (6) to develop a methodology to assess these issues in similar health systems (8) to make recommendations on health financing policy and other health policy.

The research was carried out in 12 health facilities in 2 districts. In phase 1, researchers spent 1 month in each facility observing, collating facility data, and interviewing health workers, patients and community members. In phase 2, researchers accompanied health workers identified as using specific strategies to their homes and external jobs and used observation instruments and questionnaires to explore standards of living and some aspects of activity in external health units.

The results confirm extensive engagement in a wide range of strategies. For example, estimates of drug leakage range from 40 to 94%; leakage of revenues from formal user charges from 35 to 77%; and informal charges were frequently levied. For more than half the facilities for which health workers' time inputs were calculated the average was less than 10 hours. A few health workers monopolise the income generating capacity of the public facility's resources. On average, estimates of income range from Uganda Shillings 76,000 per month (ECU 63) to U.sh. 292,000 (ECU 243). Those who operate private clinics (more senior health workers) are estimated to earn approximately U.Sh 1.2 million per month (ECU 1000); those operating drug shops about half that; and those treating patients in their homes about one eighth of that.

The different strategies had mostly negative implications for quality and accessibility of care at public facilities, although higher informal charges seem to increase opening hours and raise utilisation rates. User charge policy appears to penalise both patients and most health workers. Ownership of private facilities was associated with the highest levels of drug leakage and also resulted in poorer availability of qualified staff, shorter facility opening and lower utilisation. It is concluded that ownership of private health facilities undermines public health services to the greatest extent.

The Ugandan Ministry of Health is aware of these issues and has been formulating policy responses partly through a dialogue with the study team members. Guidelines for the operation of HUMCs have been agreed and will be implemented shortly. Measures to improve the motivation of health workers include pay rises implemented in the September 1996 budget (although levels are still short of estimated needs); an evaluation of job descriptions which led to a regrading exercise for Ministry of Health workers, and a policy to prioritise rural health workers in allocating training opportunities.

INFORMAL MARKETS AND FORMAL HEALTH FINANCING POLICY

FINAL REPORT

Objectives of the research

Introduction

This is a study of health service delivery in the situation in which public health workers are extensively engaged in a range of economic activities which have enabled them to live through times when their salaries have been insufficient for survival. Throughout this report we refer to such activities as 'socio-economic survival strategies'. The study has been concerned with the implications of this situation for the quality and accessibility of health services, and has specifically focused on the role played by the introduction of a formal user charge system.

Such a situation is by no means unique to Uganda. Similar scenarios are described in a number of other countries from all continents with otherwise divergent characteristics. Nevertheless, Ugandans are perhaps uniquely able to explore this issue openly and constructively since the country is at a critical stage in its history where the mistakes of the past are widely acknowledged, and the mood of democratisation allows open examination of problems and predisposes towards genuine attempts to find constructive solutions.

This report aims to play a part in that process within the health sector. It is directed towards policy makers in the Ministry of Health and the other Ministries in Uganda concerned with the development of the health sector. At district level it is directed at district administrations and all district health teams. It forms the basis of a series of dissemination meetings aimed at those policy makers. The meetings have the objective of informing those attending as to the content and conclusions of the study, and of enabling a debate as to the appropriate policy responses to the issues exposed. It is hoped that the report will also be used more widely by others concerned with the development of Uganda's health sector such as researchers and teachers in the field of public health; and health policy makers in other countries whose

understanding of their own situation suggests it may not be very different from that described here.

Background

Like other countries in Sub-Saharan Africa, Uganda's economy has faced problems over the last 25 years. The reasons include the internal strife, and associated socio-economic mismanagement arising from the political upheavals that characterised most of the 1970s and 1980s. In addition, external factors such as the fall in export commodity prices and high interest rates increasing the required repayments on a substantial foreign debt have had a significant negative impact on GDP.

By 1989, GDP had declined by 20 per cent in real terms and industrial production had fallen by 74 per cent¹. As a result, the government failed to sustain social services such as education and health. Budgets declined over the years and services depreciated in quality and quantity. In the late 1980s peace and stability returned to a greater part of the country and economic growth was stimulated once again. Rehabilitation of health facilities and improvement of the health care delivery system started. Although economic trends look promising, interest payments on the external debt of more than \$ 3.5 billion, consume more than 70 per cent of GDP leaving the government with little to fulfil its development programme. This situation has been reflected in the slow recovery of the health sector following the country's economic recovery. In 1972, health expenditure was 5.3 per cent of the national budget. By 1983, it had fallen to 4.6 per cent² and was estimated at 2.0 per cent in 1992³. The present national economic stability and the decentralisation policy under implementation have enabled an increase in the actual expenditure of funds allocated to the sector. In 1995 health sector

Background to the budget 1992/93, Ministry of Finance and Economic Planning.

National Health Personnel Study, MOH, Uganda (1991) Pg.105
[Unpublished Report]

State of the World's Children, 1993. UNICEF Publication

funding was increased to 7% of the national budget with donors making an important contribution to the funding of key national health programmes and projects.

The World Bank's series of Health Projects together with other aid programmes such as the EC's health service rehabilitation project in the South West of Uganda have had a substantial impact on the quality of the physical infrastructure for health service delivery. Supply of drugs and other essential supplies has been improved under the decentralisation framework.

However, health workers' salaries are still inadequate. Analysis of the 1994 recurrent budgets of hospitals shows that at district hospitals health worker salaries are below 10% of the total hospital recurrent budget, a level below the average expected figure of 25%. In a number of hospitals, no salary top-up allowances were given⁴ and the problem of delay in payment of salaries still exists.

This study was first discussed in 1990 alongside proposals which were put to the NRC (parliament) to introduce user charges on a national basis. The acceptance by the NRC of the user charge proposals and their subsequent introduction was widely believed imminent at that time but in the event, they were suspended by the NRC and a national programme never approved. Nevertheless, decentralisation policy and the development of HUMCs (intended as preparation for the introduction of the policy) prompted widespread local adoption of user charges using different levels and structures from district to district and even from health unit to health unit.

The development of this research has been guided by these renewed government efforts to promote health services in the country. This study considers a number of factors that need to be addressed before appropriate policies are in place. The following were taken to be paramount:-

⁴ MOH Working Documents, 1995

- i) the rehabilitation of health workers, and the activities carried out within health units in line with the progress made in rehabilitating the health unit structures
- ii) the development of improved user-charges' policy in public health units

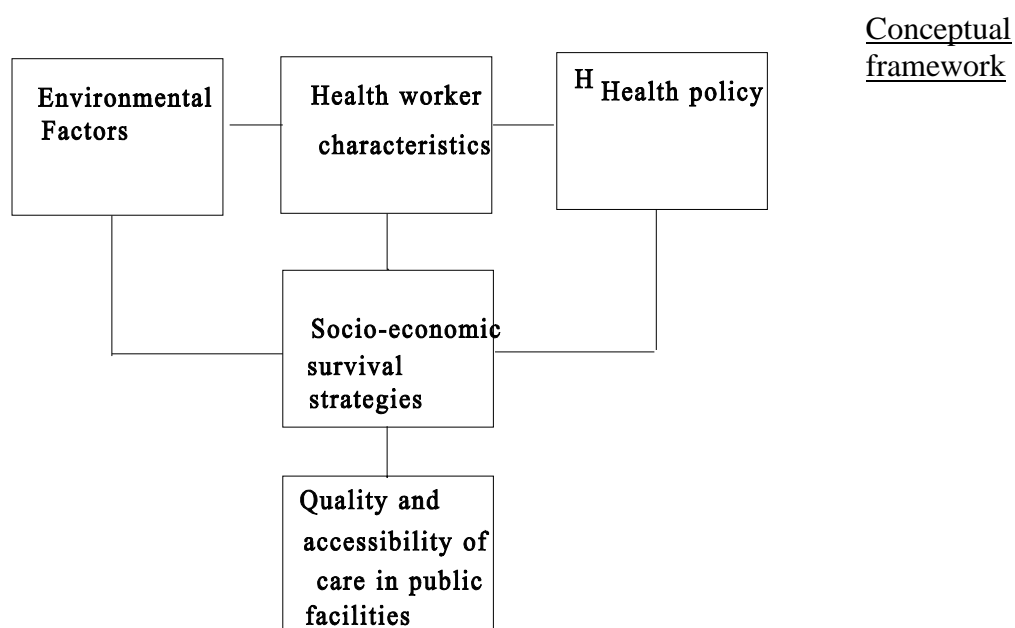
In order to address these we believe that policy makers will need a thorough understanding of the existing socio-economic survival strategies of health workers, and their implications for the user charge policy. Contributing to this understanding is the overall aim of this project.

After undergoing a series of changes responding to the changes in policy, the study was eventually funded by the European Commission in late 1994 and project activities began in September of that year. The study was structured around two phases, intended to allow for flexibility to respond to the experience of research progress, and to further changes in the policy situation should they occur.

Conceptual framework and objectives

It was decided to restrict the focus of phase 1 to the activities within public health units, and a conceptual framework to guide Phase 1 was developed and is summarised by Figure 1.

Figure 1



Socio-economic survival strategies play a major role in determining the quality and accessibility of care at public facilities through influence on the time health workers allocate to providing care in the facility; the drugs available at the facility and the price of obtaining them; the level of informal charges at the facility and the health workers' attitudes to delivering services and to patients.

Three sets of factors play important roles in determining health workers' choice of socio-economic survival strategies, and are expected also to interact with each other:

- * environmental factors such as the local economy and employment opportunities, and the range of competing health facilities;
- * health workers characteristics such as their age and sex and their aspirations and expectations;
- * national and district health policy such as the level and structure of user charges, how the revenues are managed and allocated, and supervision and training policy

The following objectives were specified:

1. To identify and describe the health workers' socio-economic survival strategies in Uganda's public health sector.
2. To examine the implications of different socio-economic survival strategies on the public health systems in terms of accessibility and quality of care and health workers' motivation and standard of living.
3. To explain health workers' choice of socio-economic strategy in terms of environment, health workers' related and policy variables.

4. To model the implications for alternative health financing policy options and other policy options for accessibility and quality of care in public health facilities.

The objectives of Phase 2 of this research were

1. to explore the external economic activities of public health workers through direct observation and to answer the following research questions:
 - (i) how much time do health workers allocate to these activities?
 - (ii) are there any evident quality problems related to clinical services offered through these activities?
 - (iii) what prices are users of such services charged?
 - (iv) how popular are such services?
 - (v) how much income do health workers earn through offering such services?
2. to further explore the living standards of health workers identified as pursuing particular survival strategies.

Taking both phases together, the study had two further objectives:

1. To develop a methodology to assess the impact of health financing in health services characterised by the existence of informal financing markets.
2. To make recommendations on health financing policy and other health policy based on the findings from both phases.

Material and methods{tc \12 "Material and methods}

Study design

The study used qualitative and quantitative methods of research to establish the range and magnitude of health workers' socio-economic survival strategies, the implications of different strategies for quality and accessibility of care and the influences on health workers' choice of strategy, and on policy. The study undertook a participative approach involving district health management team members. It was based on voluntary cooperation of health workers, health unit management committee members and members of the public in collection of data.

Two districts were selected after five possible ones had been visited. Those in which the district teams expressed strong interest and willingness to participate in the study were chosen.

Recognition that the information sought by the study might prove elusive, and that some of the first set of methods proposed might fail, led to the research being planned in two phases. If reasonably confident conclusions in response to some research questions could not be reached after Phase 1, additional methods were to be devised to address those questions. In the event, after Phase 1 we were as confident as we thought was likely to be possible regarding all the research questions and Phase 2 was used instead to address new questions concerned with the activities of health workers outside the health facilities⁵.

The planned length of the study was two years but analysing and considering the phase 1 data and then preparing the protocol for phase 2 took much more time and resources than had been envisaged. As a result, the overall length of the study was increased to 30 months and the data collection activities of phase 2 curtailed to an 18 week period rather than the 26 week period planned.

⁵ In this light, the information provided by Phase 2 might be considered a bonus, since it was not initially anticipated that these questions would be addressed. At the same time, however, the scope of Phase 2 did not allow for an in-depth study of these questions. There were a large number of activities and limitations on field work time and resources allowed only quite low samples of health workers engaging in each type. There were also some missed opportunities to collect comparable information about health workers internal (to the public system) and external activities resulting from not having anticipated a Phase 2 with this focus. This especially affects what we are able to say about quality of care in different settings. Despite these limitations, we believe that the information provided by Phase 2 has enabled greater understanding of the context of the Phase 1 results.

In Phase 1, the units were selected on the basis of a structured sample aiming to reflect the four levels of the health system with the district; hospital, health centre, dispensary and maternity unit, and dispensary. In each of the two districts, six health units were selected. In selecting facilities at the different levels of the system, the study incorporated the different local environmental settings in which these various health units were located. The varied environmental factors, health workers' characteristics and policy levels which form the core of our conceptual framework were therefore represented by the sampling frame.

In Phase 2, individual health workers were selected from among those met in Phase 1 according to their willingness to be followed up in the manner required by the protocol. 36 health workers were selected including 9 whose primary economic activity was operating a private clinic; 8, agriculture; 7, operating drug shops; 5 operating ordinary shops; 4 treating patients in their homes and 3 waged working in the drug shops and private clinics of others. This distribution resulted from attempts to select 5 each of private clinic and drug shop operators in each district and 2 or 3 each of agriculture, ordinary shop and waged workers, but substituting at the same facility where health workers did not agree to take part, could not be found or where it was not feasible to include them for any other reason. It was aimed to complete 10 exit polls for each drug shop, clinic, home treatment case and ordinary shop, where utilisation rates allowed this to be completed within one of the data collection days. Exit polls were also carried out at the clinics and drug shops of waged workers selected. 99 clinic exit polls (from 10 clinics including 1 waged worker); 90 drug shop exit polls (from 9 drugs shops including 2 waged workers); 35 home treatment exit polls and 50 ordinary shop exit polls were completed.

Prior to undertaking the field work of Phase I, a one day workshop attended by a number of health policy makers, planners and academicians was held in Kampala in Sept. 1994. The purpose of the workshop was to refine the focus of the study, develop the methodology and finalise the research design. The ultimate outcome of the workshop was a further draft of the research protocol.

The research instruments were then developed and tested in a pilot phase in January and February 1995. Methods were adjusted slightly according to the formats of information found to exist in the pilot units. After the pilot phase, the research protocol was finalised (Annex X). The phase 2 protocol was developed after phase 1 was completed. It was decided not to carry out a pilot test of the Phase 2 instruments because the protocol required the use of health workers already introduced to the study by Phase 1 and we could therefore not use health workers from non-study districts.

The study made use of a range of methods in order to gather data that could be combined to form a multi-faceted picture of issues. It employed both quantitative and qualitative methods of data collection. In Phase 1, a short questionnaire together with some sections of the facility checklist and observation schedule were the major sources of quantitative information, although some quantitative information was also extracted from the structured interview and focus group discussion results. In Phase 2, only quantitative information was collected, through questionnaire, observation checklist and exit poll.

All the research instruments can be found in the two protocols for Phases 1 and 2 respectively (Annexes 1 and 2). In general, the approach used is one known as 'triangulation': the collation of evidence from different sources. Since the information sought by this research was sensitive, a single tool might produce misleading information. By approaching our research questions from different angles, it was possible to assess the balance of evidence regarding each, taking into consideration which sources and informants have incentives to mislead.

Data collection methods

Phase 1

A short questionnaire designed to solicit background information was administered to all health workers at each unit. The exact number administered depended on the number of staff establishment and those available during the period of research at the unit. A total of 196 health workers from 2 hospitals, 5 health centres and 5 dispensaries (3 with maternity units)

were interviewed using the questionnaire. From these 196 health workers, information was gathered on their socio-demographic data, career in the health sector, income and expenditure.

This was followed by structured interviews whose respondents were selected according to the cooperation indicated by the responses of health workers at the questionnaire stage. On average, three structured interviews with were carried out with health workers at each unit and the same number of interviews were also conducted among the community members known to be conversant and/or utilising the unit. In addition a separate structured interview with at least one member of the Health Unit Management Committee (HUMC) was conducted for each unit. A total of 87 structured interviews were carried out, of which 38 were from health workers, 35 from community members and 14 from HUMC members.

Key informants were then selected from among those who responded to the Structured interviews but mostly those who showed interest in the study and were willing to give more information than could be solicited by the structured interview guide alone. A total of XX key informant interviews were carried out, XX with health workers and XX with community members.

Focus Group Discussions (FGDs) were carried for both health workers and community members. The number of FGDs with health workers was planned to be one for each unit. This was planned to be a homogenous group of 5 to 10 health workers preferably of the same rank in a given unit. Where feasible a researcher was required to form a group of respondents of the same rank and sex. However because most units were small, breakdown by sex was not possible.

In hospitals, the number of FGDs with health workers were raised to three in order to cater for categories of health workers within the unit. For community members, approximately two FGDs were carried out around each unit. A total of 41 FGDs were conducted (27 with community members and 14 with health workers).

For each unit a facility record was completed. The facility record checklist required details of the daily patient attendance recorded at the unit for the previous year. The patient attendance records reflected department utilisation on a monthly basis. This information collection was highly dependent on the records kept by the unit.

Secondly the records checklist examined the drug stocks and stock outs for the same period. The research concerned itself on the six drugs found to be among the commonly dispensed in units of various categories in the pilot stage of the research (January to February 1995). For these drugs, numbers of prescriptions were counted.

Thirdly, the records checklists required information on the user charge levels and income at each unit. The user charge levels and income information was collected for each department. The expenditure of user-charges on a monthly basis for the period of six months beginning July-December 1994 was reviewed.

Lastly the record checklist collected information on the in-patient drug use. This information collection was confined to units with in-patient service. The information on drugs prescribed were obtained from records, while information was solicited from patients concerning the actual drug given and that bought.

Observation was carried out at each unit. The purpose of this observation instrument was to collect information to supplement and cross check the facility record checklists. The observations lasted one week at every unit and included observation and enumeration of the utilisation rate, the accessibility of services in terms of presence of equipment and personnel; and the drug situation checked using exit polls.

The last instrument applied was a diary, a note book given to a health worker who cooperated to fill in his/her daily income and expenses. The exercise was to last for one month with the researchers reaching the respondent once every end of week to ensure the records in the diary had been updated. The information in the diary indicated the source of income and amount of income per day on one hand and the amount spent for a particular item on the other. The

purpose of this diary was specifically to look at the several sources of income and income levels of some health workers and the major items and amount spent. This information was to supplement information got from questionnaire and other interviews with health workers concerning their income and expenditure. A total of 24 diaries were filled.

Phase 2{tc \14 "Phase 2}

Two researchers spent one week each with health workers who had already been identified as carrying out specific economic activities in Phase 1. Three data collection instruments were applied in each case, modified according to the nature of the activity explored: First, a questionnaire explored the living conditions of the health workers in more detail than the original questionnaire of Phase 1. This questionnaire was completed between the health worker and the researcher at the health workers' home and asked about ownership of assets which could often be simultaneously observed to be present or absent. It also asked in more detail about the nature of the business operated by the health worker where relevant, such as the number of people employed and its exact location. Second, an observation checklist collected observable data related to the health workers' standards of living such as the size and condition of the health workers' home and direct evidence of development activity; and related to the health workers' place of private business including a count of utilisation. Third, where relevant (in the cases of private clinics; drug shops; ordinary shops; and home treatment), an exit poll was applied to users of services offered by the health workers. Users were asked about aspects of the quality of care they had received where relevant (at private clinics and in health workers' homes); the price they had paid and the types of drugs they received.

Results {tc \12 "Results }

Introduction{tc \13 "Introduction}

In Phase 1, the first stage of data analysis focused on each facility individually. At this level, a series of descriptive questions were asked: What are the survival strategies of health workers? What is the pattern of duty at the health facility? Do drugs leak from the facility and

if so, to what extent? What are the incomes from survival strategies? What is the level of health workers' expenditures? What is the level of quality at the facility? How accessible (financially and otherwise) are the facility's services? In addition, views were canvassed on some of the relationships with which the study was concerned: What affects health workers' choice of strategy? How do different strategies affect quality and accessibility of care?, and What has been the impact of user charge and other policy measures on all these issues? Further analysis of the questions of inter-relationships required quantitative analysis of the whole data set.

Analysis of qualitative information was in all cases based on a preliminary categorisation and grouping of statements made and the construction of tables indicating on how many occasions each type of statement was made. Each category of quantitative information was analysed according to the question addressed as explained in the following sections.

Description of health related strategies

In all facilities lists were compiled of strategies identified as being carried out by specific health workers, using information collected through questionnaire and qualitative instruments where the strategies were either admitted by the health worker interviewed or described as carried out by an identifiable health worker, by other health workers or community members. These lists undoubtedly omit strategies pursued by a number of workers since not all were interviewed, other than by questionnaire, and not all health workers' activities are known to others or happen to be described. Even where interviewed through structured or key informant instruments, health workers have patently been selective in the strategies they have admitted. For example, in some cases a particular health worker is described as owning a drug shop by many of his or her colleagues and community members but does not say so when interviewed. In all relevant cases, evidence of others is included in the strategy list despite not having been admitted by the health worker concerned. The lists were inclusive rather than exclusive, using all information given even if only by one source.

In hospitals, admitted strategies of interviewed health workers only were known, since statements made by others were seldom identifiable with particular health workers. In these facilities it was possible to distinguish strategies by category of health worker quite successfully, since category appeared to be one of the most important determining factors of type of strategy pursued (see 'Factors affecting choice of strategy' below).

Table 1 shows which health-related strategies predominate in each of the facilities. In addition, health workers claim that agriculture is a major activity in all units. The facility numbers used in Table 1 are used consistently throughout the report. Facilities 1 to 6 are in district 1; Facility 6 is the hospital. Facilities 7 to 12 are in district 2; Facility 12 is the hospital.

Table 1: Main health related survival strategies

Facility Main strategies	District 1						District 2					
	1	2	3	4	5	6	7	8	9	10	11	12
Informal charges		X	X		X	X	X	X	X	X	X	X
Leakage of user charge revenues	X		X	?		X	X	X	X	X		
Leakage of drug supply	X	X	X	X	X	X	X	X	X	X	X	
Home treatment	X	X	X			X	X				X	
Ownership of clinics etc. ¹				X	X	X	X	X	X	X		X
Waged work in clinics etc.			X	X		X	X				X	X
Training nursing aides		X										

1. 'Clinics etc.' means private clinics, drug shops, and maternity homes.

Health workers in all but two facilities routinely charge users beyond the formally agreed levels. The amounts charged vary (see Table 10), and the numbers who avoid such charges range from almost none to sometimes apparently quite large numbers including prisoners to whom it seems health workers cannot avoid offering treatment, and those with authority over health workers such as LC and HUMC members.

Drug leakage occurs in all facilities but one. In this one, accountability is much more stringent and although there is qualitative evidence that drugs do leak, the procedures used were too sophisticated to be detectable by our relatively crude methods. In most facilities, leakage rates are very high (Table 3) and account for the greatest part of the incomes earned by health workers as a whole (Table 5).

The main health related strategy outside the unit varies between units. In some, more than one health worker owns a drug shop or clinic where the facility's drugs are likely to be used. In other (mostly the smaller units) health workers mainly treat patients at home, probably indicating that their capital base has not reached the level where they could establish separate premises. Waged work in the clinics and drug shops of others is available in towns and around units large enough to sustain separate private premises.

Training nursing aides is an activity of only one facility but makes a substantial contribution to the income earned there (Table 5).

Drug leakage{tc \13 "Drug leakage}

A number of health workers' survival strategies listed above depend on use of drugs supplied to the facility. Health workers always claim to purchase drugs for their drug shops and clinics from nearby towns but other sources of information frequently contradict this. Drugs with essential drugs labels are said to be purchased from health workers' shops; health workers seem to know where 'out of stock' drugs can be found in nearby shops and clinics; and community members, management committee members and health workers themselves frequently accuse other health workers and committee members of supplying or receiving

consignments of drugs originally supplied to the facility. In one facility, a health worker immediately opened a drug shop on assuming the in-charge position. Treatment at home, and sale of drugs from home are also facilitated by use of the unit's drug supply, as one of the researchers witnessed in two cases.

Quantitative information was compared with community and health workers' accounts of their perceptions of the extent of drug leakage from the facility. The use of quantitative information was complicated given that those health workers responsible for drug leakage were mindful of the potential of drug stock records being monitored. Leakage was not likely to be evident from a simple stock audit.

The design of the protocol took account of this problem and developed a several pronged strategy to identify the extent of drug leakage. Theoretically, drug leakage might be identifiable through any of the following audits:

a) Comparison of stock depleted with number of prescriptions. A standard volume of drug per prescription was identified for each of five tracer drugs (cotrimoxazole, metronizadole, chloroquine injectible, PPF injectible and ampicillin) as shown in Table 2. Actual rates of use per prescription were then compared.

Table 2: Standard expected volume of drug use per prescription

Drug	Standard drug per prescription
Cotrimoxazole	12
Metronidazole	9
Chloroquine injectible	0.4
Ampicillin	16
PPF	0.15

b) Comparison of observed and recorded utilisation rates. The number of patients attending the health facility was counted for a period of one week. This was then compared to the number of patients recorded for the whole of 1994. The aim of this comparison was to estimate the extent of inflation of utilisation statistics. Since prescriptions were listed against every patient with very few exceptions, one method of recording more prescriptions than were actually made would be to fabricate attendance figures. The major limitation of this comparison is that attendance was observed for only one week whereas utilisation is well known to fluctuate seasonally. Nevertheless, the comparison enabled an estimate of whether or not the order of magnitude of attendance was similar to that recorded, and to provide an estimate for the centre of a confidence interval of unknown range, of the extent to which utilisation statistics are inflated.

c) Comparison of the recorded issuing of drugs to attending patients with drugs actually received. Drugs may be recorded as issued while patients received either a smaller quantity than recorded or were told the drug was out of stock altogether. An outpatient exit poll and an inpatient drug survey established the extent to which this happened to samples of patients. In most cases this estimate was based on a simple count of numbers of tablets, capsules, injections and so on recorded and received. In some cases, prescriptions were not legible and the comparison was based on the number of types of drugs recorded and received. In this case, the extent of under-dosing remained unknown.

Drug leakage was therefore estimated to be $1-(a*b*c)$, where a is the proportion of drugs accounted for by the number of prescriptions at the reasonable prescription rate, b is the proportion of the recorded utilisation judged to be real attendances, and c is the proportion of drugs prescribed which were issued.

Table 3: Drug leakage estimate

	District 1	District 2

Facility	1	2	3	4	5	6	7	8	9	10	11	12
% recorded patients 'ghost' ¹	13	0	22	80	57	-	0	29	64	0	0	0
% prescribed OPD drugs received (exit poll)	95	73	73	90	54	-	68	67	54	72	38	69
% prescribed IP drugs received (inpatient audit)	-	84	-	-	-	-	62	71	75	-	26	80
% drugs issued from stocks accounted for by no. of prescriptions (median) ²	40	76	53	36	29	16	40	35	40	40	68	10 0
Working leakage estimate	67	40	70	94	93	84	74	83	91	72	78	? ³

1. Comparison of recorded with observed utilisation is either calculated on the basis of OPD alone (where OPD alone observed), or making an adjustment for immunisation numbers on immunisation day in the facility, and recorded immunisation numbers. This is because recorded immunisation numbers include attendance numbers recorded at outreach clinics.

2. The median rate of over-use per prescription of tracer drugs is used because a few drugs are prescribed so rarely (and yet still are used up) that an average rate would be excessively biased by a few results whose representativeness of other drugs is not known. Four (33%) of facilities were not able to produce, or had not completed stock cards, even although these are meant to be a pre-condition for receipt of essential drug kits. It is unlikely that these facilities have a better than average record of leakage at this point. The median of the medians for the other facilities has been used to produce a working estimate of drug leakage for these facilities (shown in brackets).

3. In facility 12, the relationship between drug supply and expected patient needs is not known. Drug audit is much more rigorous than in other units meaning that drug leakage, if any, must use more sophisticated means which were not detectable by our methods. It is not clear that where patients did not receive drugs, it is not due to drug supply inadequacy, as it is in all other facilities.

'Ghost' patients are estimated by comparing the number of patients observed during one week with the numbers recorded in the register. While the week may not have been representative, in three facilities the utilisation rate was less than half the recorded rate. This is very unlikely to be due to random variation. In some facilities, the observed number of attenders was higher than the recorded rate. In these cases, it is concluded that recorded numbers are not inflated (no 'ghost' patients). It is possible that the remaining difference is due to random variation (the differences in these cases are usually relatively slight), or that

some under-recording takes place, perhaps to cover low official collection of user charges (see ‘user charges’ section below.). Where ‘ghost’ patients are recorded, the reason is undoubtedly to record prescriptions to account for drugs used elsewhere, as is frequently confirmed by the qualitative data.

The phase 1 outpatient exit poll and inpatient drug audit (in those facilities with inpatients) selected a small number of patients to check how many prescriptions were filled at the facility. The average of the two was used where both were carried out. Again, the small samples may be unrepresentative and may under or over-estimate. In the median facility, patients are asked to buy 31% of the drugs they are prescribed, and one of patients’ major complaints is being asked to buy drugs elsewhere. These percentages are based on simple counts of tablets, injections etc. prescribed and received (taking into account that second injections cannot be delivered at the same visit), and do not take account of which types of drugs are received and which not. Patients frequently allege that it is the drugs they consider ‘strong’, which have higher market prices, which are not issued.

Using an estimate of the number of tablets, injections etc. that would be expected to be prescribed each time, a comparison was made of the number of prescriptions counted in the prescription book, and the volume of drugs used according to the stock cards. This indicates the amount of drugs which are simply removed from the stores without any attempt to cover this by false accounting. This appears to be the major route through which drugs leak, accounting for 60% leakage in the median facility. This median has been used also for those facilities which were unable to produce stock cards. It is likely that these facilities perform worse rather than better than average in this respect and therefore that the estimate understates the extent of the problem.

The table shows that a very small proportion of the drugs supplied to health units are prescribed and issued there. In the median facility, drug leakage is estimated at 78%. In only one facility (2) do more than half the drugs supplied reach patients who attend there. Overall, considering the uncertainties surrounding the estimates discussed above, there is reason to

believe that they under rather than over-estimate the size of the problem. Those drugs which are issued through the facility are in some cases supplied free and in others paid for there.

Drug leakage does not reflect the activities of facility health workers alone but is frequently alleged also to involve members of the District Health Teams and the Health Unit Management Committees.

Income and expenditure levels, and living standards of health workers

Overall estimates

Structured interviews and diaries asked health workers to estimate their income levels directly. The structured interview guide also provided the list of topics on which key informants would be further probed.

In comparison, other qualitative and quantitative sources provided indirect information relevant to income levels to the extent that a number of strategies identified and described could be analysed with respect to the income likely to be generated. In particular:

- a) information concerning informal charge levels and frequencies was used to estimate the total informal charge revenue generated by the facility. Information about how these charges varied by department and were applied by different cadres of staff, was sometimes sufficient to enable estimate of its distribution between workers (or the share of particular workers);
- b) the estimate already made of the extent of drug leakage was combined with estimates of local drug prices to calculate the resale value of the leaked drugs. Similarly, other information was sometimes sufficient to distribute this income between the workers, or some of them;
- c) the expected income from user charge revenues calculated by multiplying the official charges with the utilisation rate imputed from the observed attendance numbers was

compared with the recorded income from user charges, and the recorded expenditure of user charges. This analysis was 'triangulated' with qualitative information regarding the extent of user charge revenue leakage, the extent of exemption given, and in some cases the likely shares of particular workers in this source of income could be calculated; and

d) the utilisation and charge levels at health workers' private businesses enabled an estimate of the gross income earned there. It was not feasible to collect cost information with which to calculate net incomes.

Similarly, health workers made direct estimates of their expenditures in structured interviews, key informant interviews and diaries. This was compared to an estimate of what health workers' require in order to provide adequately for their households, given their household characteristics. These estimates relied on household characteristic information provided by the questionnaires. This enabled estimate of the total expenditure requirement of the health workers' household based on its size, age and sex characteristics, and the number of members in full time education, under the assumption that the expenditure requirements per person in each category would be the average for the area (either Eastern urban, Eastern rural, Western urban or Western rural). Average expenditures by area are reported by the Uganda National Household Budget Survey (1990-1) and were adjusted for inflation using the Uganda consumer price index. Since the researchers themselves had experience of financing school education in the two regions, their own estimates of requirements were used for this component of the calculation. Expenditure requirements for households in which the health worker was the sole bread winner were made separately, but did not differ greatly. This suggests that second bread winners did not explain the difference between estimated expenditure requirements and health workers' formal incomes.

Table 4: Income and expenditure estimates (Uganda shillings, monthly)

District 1						
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Facility	1	2	3	4	5	6
Average income (directly reported)	69297	60933	69457	520240	89500	89000
Average income (indirectly estimated)	186497	142567	270922	164729	292039	- ¹
Average expenditure (directly reported)	47398	101319	111450	407300	105400	168100
Average minimum household expenditure (indirectly estimated)	164747	164468	186604	244097	181336	219934

District 2

Facility	7	8	9	10	11	12
Average income (directly reported)	107423	82290	67824	79729	28586	153663
Average income (indirectly estimated)	142309	161479	76461	156658	173765	129479
Average expenditure (directly reported)	98533	153075	88165	74248	61408	223229
Average minimum household expenditure (indirectly estimated)	137633	121069	108781	107184	97084	274,648

¹ Could not be calculated because utilisation levels could not be reliably estimated during the strike.

Direct estimates of income and expenditure suggest moderate incomes. The average facility directly reported income is 118,162/- per month, and expenditure 136,635/-, but these are strongly influenced by one outlying facility and the medians are 81,010/- and 103,360/- respectively. These would suggest that health workers are poor compared to the average resident of their region, and that incomes are insufficient to meet the expenditure requirements associated with their household characteristics (average facility level 167,298/-).

However, other evidence suggests this is unlikely. There are 1.11 children at school for every one school age child in health workers' households (many outside school age are also at school). For their regions as a whole, there was a range of 0.64 (Western rural) to 0.84 (Western urban) children at school for every school age child in 1989-90 (extrapolated from the Uganda National Household Budget Survey, February 1991). 35% of health workers are undertaking development expenditures (usually building or establishing a business), indicating a surplus of income over basic requirements, and 15% of health workers employ house servants or casual labour at their homes.

A number of factors are likely to explain this discrepancy. First, health workers consistently understate their incomes and expenditures. Many important income sources are not willingly discussed by health workers, and when acknowledged, under-stated. Second, expenditure estimates, particularly the diaries in which daily expenditures were noted by a few health workers for a period of one month, are likely to suffer from this problem and will also normally exclude occasional expenditures which are saved up for, such as building expenditures. However, diary estimates of expenditure are likely on the whole, to be more reliable and do indicate higher levels, closer to the indirect expenditure estimates. Third, there is likely to be a wide range of incomes and expenditure around the experience of the average health worker. 22% of health workers have school age children who are not in school which usually indicates an inability to raise income for basic requirements. A majority do not undertake development activities or employ servants indicating an income not much greater than that needed for basic expenditures.

These considerations suggest more credence should be placed on the indirect estimates of income (average facility level, 172,446/-) as measures of the average. Nevertheless, the qualitative evidence suggests incomes are highly skewed with a few health workers monopolising most income earning activities in each unit. The incomes of these few can be estimated in multiples of the average indirect income estimate. About 65% of health workers who do not undertake development expenditures can be estimated to have incomes in the range of, or below, the indirect expenditure estimates. About 22% of health workers whose children are out of school can be estimated to have incomes below these levels.

Distribution of income by source{tc \l4 "Distribution of income by source}

The following table allows further analysis of the sources of income, and insight into the explanations of the variation in income by facility and the likely distribution between health workers.

Table 5: Indirect income estimate by source (Uganda shillings, monthly)

District 1						
Facility	1	2	3	4	5	6
Informal charge income	0	362000	445000	0	345000	(1)
Drug leakage value	680873	541371	711360	1233145	708825	(1)
Unaccounted user charge revenue ³	104613	-	(344025)	261500	-	651652
Training NAs	-	250000	-	-	-	-
Salaries and allowances	147000	272300	198249	482100	114330	5217252
TOTAL	932486	1425671	1354609	1976745	1168155	(1)
Average income per worker (total)	186497	142567	270922	164729	292039	
District 2						
Facility	7	8	9	10	11	122
Informal charge income	372400	938600	304800	647500	545,400	3442000
Drug leakage value	650892	701610	777689	406767	428755	-
Unaccounted user charge revenue ³	(210562)	(320108)	(155633)	(311616)	-	-
Training NAs	-	-	-	-	-	-
Salaries and allowances	115176	459017	370268	199000	242200	2902466
TOTAL	1138468	2099227	1452757	1253267	1216355	6344466
Average income per	142309	161479	76461	156658	173765	129,479

worker

1. Data missing because utilisation unknown: facility visited during strike period
2. Facility 12 data relates to outpatient department only
3. User charge income in parentheses where it is less than informal charge income. It is assumed that informal charge income estimates include these amounts. Totals exclude these amounts in order to avoid doublecounting.

The table shows that the greatest source of income for health workers in most units is resale of drugs. Since the number of drug kits supplied per unit is higher in District 1 than in District 2, drug related incomes dominate to a greater extent in this district. This implies that those health workers with control over drug stocks are those likely to absorb the greatest share of the facility's revenue generating capacity. In most non-hospital health units, this is the in-charge, and in some, it is a shared responsibility with one other more senior health worker. The reason for sharing the responsibility is usually that the in-charge attends at the unit only rarely and instead is occupied by a lucrative activity elsewhere. The profitability of these enterprises is explored further below. This evidence alone suggests they are sufficiently lucrative to make sharing control of the drug supply worthwhile. In one unit, the District Medical Officer controls drug stocks directly. While most clinical health workers are able to sell some drugs, this is likely, even in total to account for a small proportion of the leaked drugs.

Incomes from unaccounted user charge revenues are bracketed and not added to the total where informal charge incomes are calculated, since it is assumed that informal charge amounts quoted by the community include formal charges. The maximum of either amounts is usually smaller than the income from drug sales. In some cases the amounts estimated are likely to be over-estimates since they assume that everyone pays, which is only the case in some units. In others, they are underestimated since the lowest estimates reported by the community are always used, and some types of charge have usually been excluded because the frequency of use is not known. These include laboratory and X-ray charges, assault cases (for which police report forms are charged heavily) and sale of gloves and stationery. The first two of these (laboratory and X-ray charges, and assaults) are among the highest levels of charges quoted overall.

In some units, in-charges also ensure themselves a large share of these amounts, by controlling user charge revenues, and controlling police forms for assault cases. Despite this,

informal charges as a whole are generally more evenly shared as they can be levied at any point, and unaccounted user charge revenue seems to be concentrated at the point of levying rather than further up the system (see "User charges" section below). Distribution depends on the individual health worker's capacity to levy charges, dependent in turn on the job assigned within the unit. More qualified health workers are generally recognised as such by patients and are able to levy higher charges. Laboratory and X-ray staff hold powerful positions over patients and prosper from informal charging. This means that the bulk of this income is probably earned by nurses, midwives, laboratory and X-ray staff. Field staff may also earn significantly from informal charges but the facility based focus of this part of the research does not enable estimation. In one unit a small (100/-) charge for immunisation outreach accounted for half the total of informal charge income estimated.

Salaries and allowances are likely to be the most evenly distributed source of income, but in most units are insignificant relative to other sources. All this evidence implies that the sizable groups of health workers omitted from adequate income earning opportunities are nursing aides and group employees. These are confirmed as having the highest proportion of children out of school (26 and 43% having children out of school respectively). Further exploration of differences in living standards is made below.

The estimates associated with the two hospitals included in the study are less reliable than those associated with the non-hospital facilities. The hospital in district 1 (facility 6) was visited during the strike, making utilisation information doubtful. Quantities of drugs supplied to this hospital are also not known since records made available were illegible and supply is not under the control of the DMO. In the hospital in district 2 (facility 12), formal accounting procedures within the hospital are much tighter and only informal charge levels, and salaries and allowances have been used to calculate income levels. It seems that the result of such tighter control is to lead to a greater proportion of income being earned outside the facility and the estimate indicated is not therefore comparable to those of the other facilities. The estimate is likely an under-estimate since it is less than the estimated average household expenditure requirement, whereas a higher than average proportion of health workers from

this facility make development expenditures (41%) and employ servants and casual labour (19%).

Prices, utilisation levels and incomes earned in external activities

Those questioned in exit polls in Phase 2 were asked how much they had paid; whether or not they had previously visited this or the public facility; and if they had visited the public facility, how much they had paid there. Weekly utilisation was observed for one week at each care setting. Income was imputed based on the observed utilisation level and the reported total charges. These data are presented in Table 6.

Table 6: Prices, utilisation patterns and imputed incomes from external activities (Uganda shillings)

	Private clinics	Drug shops	Home treatment	Mean
Own price	2946	1376	1660	2116
Public facility price	4187	1906	606	2473
Those visiting care setting for first time (%)	72	74	78	75
Those previously visiting public facility (%)	39	51	71	54
Weekly utilisation	95	77	17	79
Imputed monthly income	1,212,770	459,125	122,287	724,377

Private clinics had the highest charges at nearly U.Sh.s 3,000 whereas drug shops and home treatment were likely to cost patients similarly at around half that amount. The average public facility price (previously paid by visitors to these external facilities) is similar to the price paid at private clinics but varies substantially according to the type of external treatment source visited. Those visiting health workers in their homes had previously paid the lowest price at public facilities. This might be explained by the much higher percentage of patients

who had previously attended the public facility in this setting. Patients may have been redirected from the public facility to health workers homes without being charged, or charged only nominally in the first site. The higher amounts previously paid at public facilities by private clinic users most probably reflected the higher income levels of clinic users. Such users would be more likely to offer above average payments in public facilities to secure better services. Alternative explanations are that private clinic users suffered from more serious (or at least more expensive) conditions; or that the higher payments previously demanded at public facilities had influenced their decision to seek care at private clinics as a substitute.

The percentages previously using a public facility suggested some differences in the roles of the respective care settings. While it seemed that home treatment and to a lesser extent drug shops largely provided complementary services to public facilities, private clinics were largely substitutes.

There appeared to be no great differences in the levels of customer loyalty or percentages using the same setting more than once at each of the settings. Around three quarters were first time users in each.

Private clinics were most heavily used, and home treatment least so. The imputed income estimates calculated by multiplying the observed utilisation by the average prices paid confirmed the vastly superior earning power of private clinics over drug shops (2.6 times more profitable) and especially over home treatment (9.9 times more profitable). Of course, these income estimates are gross rather than net: they did not allow for business expenses which were likely to be much higher for private clinics than for home treatment.

Living standards associated with external activities

Information on living standards derived from the questionnaire and observation schedule applied to individual health workers in Phase 2. The sample sizes were small, and the

numbers in Table 7, which reports selected indicators of living standards are reported as whole numbers rather than percentages to emphasise this.

Table 7: Indicators of living standards

	Private clinic	Drug shop	Home treatment	Ordinary shop	Waged work	Agriculture
Area of house (m ²)	78	35	32	36	33	44
Area of compound (m ²)	39	19	39	51	25	24
Families sharing space	1.56	2.43	1.0	3.0	1.0	1.62
Walls brick	2	1	2	1	1	1
wattle	7	6	2	4	2	7
Roof grass/papyrus	0	0	0	0	1	1
iron sheets	9	7	4	5	2	6
tiled	0	0	0	0	0	1
Maintenance good	6	3	1	3	1	2
average	2	4	2	2	0	4
poor	1	0	1	0	2	2
Cleanliness good	5	5	2	2	1	4
average	3	2	1	2	2	1
poor	1	0	1	1	0	3
Presence of radio	9/9	7/7	3/4	5/5	3/3	8/8
TV	5/9	1/7	0/4	2/5	0/3	1/8
VCR	1/9	0/7	0/4	0/5	0/3	0/8
bicycle	3/9	4/7	3/4	3/5	2/3	5/8
motorcycle	0/9	2/7	0/4	0/5	0/3	0/8
car	4/9	0/7	0/4	0/5	0/3	0/8
refrigerator	1/9	0/7	0/4	0/5	0/3	0/8
electric cooker	0/9	2/7	0/4	1/5	0/3	0/8
electricity	7/9	4/7	0/4	2/5	1/3	1/8
water	5/9	2/7	0/4	2/5	1/3	0/8
flush toilet	3/9	1/7	0/4	2/5	1/3	0/8

phone	2/9	0/7	0/4	0/5	0/3	0/8
Commitment to help other family members	8/9	6/7	2/4	5/5	1/3	4/8
Receive help from other family members	0/9	0/7	2/4	1/5	1/3	0/8

These data consistently suggested (with only a few minor exceptions) that clinic owners had highest standards of living, but were inconsistent in ranking other economic activities in their capacity to support living standards.

A range of indicators of standards of living were collected in phase 2 of the research and overall comparison between health workers requires that either one indicator is assumed to summarise standard of living, or that an index has to be compiled. Two alternative indicators were selected as potentially summarising standards of living: (i) the area of the house and compound available to the health worker's family, or (ii) a measure of family commitments counting +1 where the health worker was responsible for supporting family members outside his or her immediate family, and -1 where the health worker was helped by extended family members. Two alternative indices were compiled to summarise the presence of assets in health workers' homes. The first counted +1 for every asset from the list developed. The second weighted the same components by the inverse of their rarity (for example there were 4 cars among 36 health workers. The weight given to cars was $36/4=9$).

Table 8: Alternative rankings of living standards

	Private clinic	Drug shop	Home treatment	Ordinary shop	Waged work	Agriculture
Area of house and compound per family	75	22	71	29	58	42
Rank	1	6	2	5	3	4
Ratio to mean	1.53	0.45	1.45	0.59	1.18	0.86
Family commitment	0.95	0.93	0.5	0.9	0.5	0.75

Rank	1	2	5=	3	5=	4
Ratio to mean	1.18	1.15	0.62	1.11	0.62	0.93
Index 1	6.6	4.6	2.5	4.6	3.7	2.9
Rank	1	2=	6	2=	4	5
Ratio to mean	1.49	1.04	0.57	1.04	0.83	0.66
Index 2	28.9	17.2	5.8	13.5	14.8	7.5
Rank	1	2	6	4	3	5
Ratio to mean	1.81	1.08	0.36	0.84	0.93	0.47

Family commitment produced similar results to the two indices. These suggested that private clinic owners had highest living standards followed by drug shop owners. Those engaged in home treatment appeared to have the lowest standards while ordinary shop owners, waged workers and agricultural workers ranked in the middle. Weighting the index according to the rarity of its positive components increased the extent to which clinic owners' living standards outweighed, and those engaged in home treatment were outweighed by others. Area of house and compound appear to be poor predictors of living standards if the other data are believed.

User charges

9 of the 12 facilities have instituted formal user charges. These have generally not been successful according to both community members and health workers, although two facilities seem to provide exceptions. Most commonly, health workers talk of initial enthusiasm for the scheme, encouraging them to work harder and please patients, in the expectation that a considerable cost sharing allowance would result. To some extent these expectations may have been unrealistic. It is also clear that leakage of revenues at different levels caused allowances to fall far short of the level they would otherwise have reached. Whatever the cause, such enthusiasm proved short lived and if anything, user charges have been added to health workers' list of grievances and serve as an additional demotivating factor. Health Unit Management Committees are widely accused of participation in the leakage of revenues and drugs, and of awarding themselves over-generous sitting allowances and other benefits. Even in the facility where user charges are working better, community members do not recognise the HUMC as representing them.

In general, community members do not consider the levels at which formal user charges are set (usually, for example, between 300/= and 500/= for an outpatient attendance and between 2,000/= and 3,000/= for a delivery) to constitute a barrier to utilisation in isolation. However, in combination with unavailability of drugs and other perceived quality problems they may do so.

The following table estimates the extent of leakage of user charge revenues:

Table 9: User charges (Uganda shillings)

District 1						
Facility	1	2	3	4 ⁹	5	6
Recorded user charge revenue (per month) ⁶	60825	NA	193100	-	NA	1372583
Recorded user charge expenditure (per month) ^{6,8}	36387	NA	151475	-	NA	1202348
% shortfall (excess)	40	NA	22	-	NA	12
Expected user charge revenue (per month) ^{1,2,3,4,7}	141000	NA	495500	-	NA	1854000
% shortfall (excess) of recorded compared to expected ⁵	57	NA	61	-	NA	28
District 2						
Facility	7	8	9	10	11	12
Recorded user charge revenue (per month) ⁶	52317	259433	128400	133300	NA	3390761
Recorded user charge expenditure (per month) ^{6,8}	63583	150791	59967	124266	NA	3341478
% shortfall (excess)	-22	42	53	7	NA	-1
Expected user charge revenue (per month) ^{1,2,3,4,7}	274100	470900	215600	435882	NA	-
% shortfall (excess) of recorded						

compared to expected ⁵	81	45	40	70	NA	-
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Expected user charge revenue is calculated using the following assumptions.

1. Observed numbers of attendances were used as the basis for calculation, adjusted as for table 3.
2. Where charge rates are divided according to first and repeat attendances, all OPD cases are assumed to be first attendances and all ANC cases are assumed to be repeats. Where adult and child rates are separated, attendances are assumed to be half child, half adult.
3. No allowance has been made for exemptions.
4. In facility 6, recorded numbers have been used since observation occurred during the strike period and cannot be assumed to be representative.
5. Where separate charges for laboratory and theatre are made, these are excluded from both the denominator and numerator of the comparison of recorded with expected income, since numbers of operations and laboratory tests are not known. This leads to some of the percentages in row 5 not reflecting the estimates in rows 1 and 4 exactly. This could not be done for facility 12 where revenue records were not broken down by department. Expected revenue has therefore not been calculated.
6. Where there is missing data, the monthly average of the data available is used, periods are not always exactly co-terminous for all calculations. Where all data were available, the period compared is July to December 1994.
7. Inpatients are assumed all to be charged at the rate for one day, or the minimum.
8. Where records of banked amounts were available (only in one facility), they were included as expenditure.
9. There were no records available in facility 4 which had only just begun charging user charges

The expected user charge revenue is based on the observed utilisation rate, and assumes that all patients pay. While allowance is intended to be made for an exemption rate of between 20 and 30% for the poor (according to current Ministry of Health guidelines), it is clear from the qualitative evidence that those unable to pay are turned away rather than exempted, and that nearly all those who are unable to raise the expected cost simply do not come. On the other hand exemptions do seem to be unavoidable in the case of prisoners who are common users of two of the facilities. Exemptions are also made available to those with authority over health workers such as LC and HUMC members. In most facilities the percentage of these users is not likely to be very high but misappropriation may be over-estimated in one or two facilities. Combining the difference between recorded revenue and expenditure, and the difference between expected and recorded revenue, leakage ranges from 0 to 77%, most commonly around 70%.

The data indicate that it is most common to neglect to record revenue collected, a strategy open to all health workers who collect revenue, than to divert money from recorded revenues, presumably only open to a few health workers and HUMC members who are responsible for the money once collected. In this light, formal user charges are often identical in their effects to informal user charges. They are levied sometimes alone and sometimes in addition to other charges, and are directly appropriated by the attending health worker.

Informal charges

Informal charges are more consistently applied and at significantly higher levels in District 2 ([$p < 0.05$] for the middle estimate of outpatient charges) than in District 1, where two facilities do not charge above the formal level. There are considerable differences in the real cost of consulting each facility in the same situation as indicated in the following table:

Table 10: Real financial cost of consulting facility (Uganda shillings)

District 1						
Facility	1	2	3	4	5	6
Outpatient visit	(300)	(0)- 3,000	(500)- 2,500	(500)	500- 1,000	(600)- 2,000
Delivery	NA	2000	5000	(3000)	1,000- 7,000	(5,100)- 10,000
Inpatient stay of 3 days	NA	5000	NA	(2000)	-	(4,600)- 6,600

District 2						
Facility	7	8	9	10	11	12
Outpatient visit	(200)- 5,000	2000	(500)- 5,000	(300)- 5,000	1,400- 4,500	(500)- 20,000
Delivery	3000	3000	3,000- 10,000	3,000- 7,000	3,000- 10,000	10,000- 200,000
Inpatient stay of 3 days	NA	Not reported	4,000- 5,000	NA	9,000- 11,000	4,000- 7,500

1. In each case the range of charges reported by community sources is quoted.
2. Amounts in brackets are equivalent to formal user charge levels indicating that informal charges are not always levied.

The amounts shown are sometimes equivalent to the formal charges (in facilities 1 and 4), and sometimes include the formal charge as the lower estimate, indicating that informal charges are not always levied.

Qualitative evidence on the implications of these estimates for financial accessibility indicates that some of the amounts charged are absolutely outside the ability to pay of most people. This applies to almost all charges at facility 12 which is considered by the community to be a facility only available to the relatively rich. In the facilities where charges are usually quite low, they are considered affordable by most. Some facilities are even said to be only for the poor, since anybody with more resources is expected to seek better quality services elsewhere.

Utilisation levels of public facilities

The qualitative evidence indicates, therefore, that low utilisation is sometimes caused by financial inaccessibility, and sometimes by poor perceived quality. The result in all non-hospital units is extremely low utilisation. The following table shows selected utilisation levels in the 12 facilities.

Table 11: Utilisation levels of public facilities

District 1						
Facility	1	2	3	4	5	6
Monthly outpatient attendances ¹	327	845	701	359	117	1964
Catchment population ²	22546	36343	24508	13030	24584	27038
% catchment population attending	1	2	3	3	0	7

outpatients in 1 month						
Monthly deliveries	0	25	19	20	0	64
Monthly inpatient admissions	0	4	4	5	0	223

District 2

Facility	7	8	9	10	11	12
Monthly outpatient attendances ¹	335	386	330	599	358	2284
Catchment population ²	57820	230691	32569	45008	12009	1106000
% catchment population attending outpatients in 1 month	1	0	1	1	3	0
Monthly deliveries	39	30	7	10	0	369
Monthly inpatient admissions	6	21	24	?	30	1103

1. In each case numbers given are based on the observed utilisation rate, adjusted as for table 3, except facility 6 where observed data could not be relied upon owing to the strike. In this case, recorded data was used.

2. Ministry's official catchment population, not whole district population for hospitals.

In the average facility there are less than 20 outpatients per day. In some facilities there are also significant numbers of ante-natal care patients and there is usually a busier immunisation day. Nevertheless this level of utilisation is less than expected of the smallest rural unit and most units can and do manage the workload with only one qualified health worker despite the expected staffing levels being much higher. Seven of the ten non-hospital facilities have utilisation levels lower than the average for the small private clinics studied in Phase 2 (see Table 6 above: the weekly utilisation of private clinics reported there of 95 is equivalent to a monthly utilisation of 411).

Expressed as a proportion of catchment population, outpatient attendances range from 0.2 to 3.0% per month in non-hospital facilities with a mean of 1.6%. As indicated above, the overall low level reflects lack of public confidence and financial inaccessibility, but differences between units are also likely to reflect their physical accessibility and the alternative facilities available.

Correlation analysis was used to assess some of the influences on utilisation. The method used is described in the section, 'Impact of strategies on quality and accessibility' ('Quality and accessibility of care inside public health units'), below. There is a strong correlation ($r=0.76$) between the value of drugs remaining in the unit and outpatient attendance rates which confirms the connection between quality and utilisation, and the importance of drug availability in quality perceptions. However, the relationship between the real cost of an outpatient attendance and utilisation fails to confirm the role of financial accessibility. Rather, a strong *positive* correlation ($r=0.80$) exists suggesting that in facilities where quality is perceived to be high and utilisation is high, health workers are able to levy higher informal charges.

Deliveries and inpatient services are offered only in some units. Given the catchment populations, the numbers of deliveries are extremely low indicating that deliveries do not usually take place in public health units. Only the hospital in district 2 (facility 12) seems to offer a popular maternity service. Again, this reflects most importantly, the public's confidence and the financial accessibility of delivery services in these units relative to the alternative services of TBAs and private maternity homes.

Inpatient numbers are insignificant at less than one per day in all non-hospital units. One unit (unit 10) provides inpatient services despite officially not having this role. Numbers are not recorded, however.

It is difficult to comment on the levels of utilisation at the two hospitals without more detailed study since the two are very different (one a large urban hospital, facility 12, the other a small rural hospital, facility 6). Their catchment populations appear to have been defined using different criteria, and their referral function implies that utilisation should be assessed considering the nature of cases attending rather than the absolute numbers.

Time inputs of health workers

Time inputs by public health facility

The major source of information used to address this question was the direct observation of health worker attendance during one week. On each day, arrival and departure times in the morning and afternoon by member of staff were observed and recorded, and a table constructed of the average weekly hours on duty by grade of staff. This was compared with health workers' accounts of their attendance patterns, and community accounts of their experience of health worker presence at health facilities.

The major limitation in reaching conclusion on this question was that health worker attendance was observed for only one week. Some activities of health workers were admitted to be seasonal and the observation week was inevitably unrepresentative. Secondly, particularly in smaller facilities, there may have been an observation bias in that health workers attendance may have been better when they knew they were observed. This problem was minimised by ensuring that observation did not take place in the first week of visiting the facility. The novelty of

the researchers' presence was likely to have worn off by the second or later week and it is unlikely that health workers strongly dependent on external activities would be able to neglect them for more than one week.

The following table shows the weekly hours worked on average by health workers in the 12 facilities.

Table 12: Average weekly hours worked in the facility per health worker¹

District 1						
Facility	1	2	3	4	5	6 ⁴
Total weekly hours	30	58	128	14	42	-
Hours per worker attending during week observed	15	14	26	2	14	-
Hours per worker (total ³)	8	7	26	1	8	-

District 2						
Facility	7	8	9	10	11	12 ²
Total weekly hours	86	86	133	172	137	355
Hours per worker attending during week observed	12	29	12	22	27	27
Hours per worker (total)	11	7	7	21	20	7

1. The table includes clinical and laboratory health workers only.

2. In facility 12, the number of health workers prevented identification of job titles with individuals and the total number of clinical staff on duty is estimated as the largest number attending on any one day (13). The calculated total is therefore a maximum. Facility 12 data relates to outpatient department only

3. Health worker totals are counted as the number observed in the unit during the whole month since the establishment is often a poor guide to how many workers are actually employed there. In facility 12, the number observed was too high to count and the official establishment figure has been used, adjusted for the fact that only the outpatient department was observed.

4. No analysis of the hours worked observed in facility 6 has been carried out owing to the unrepresentative (strike) period in which observation took place.

The hours worked are very low reflecting the fact that most units are open only for 2 to 3 hours in the morning and have informally arranged shift systems which require at most one qualified health worker to be on duty at any one time. Given the low utilisation levels described above, one qualified worker is usually sufficient to deal with the workload. Short opening hours mean that emergency services are unavailable at the facility. Time delays in securing the assistance of health workers sometimes prove critical and emergencies are usually taken straight to health workers homes at night, or private facilities during the afternoon.

In most facilities, the largest proportion of the hours worked are contributed by nursing aides and the average number of hours contributed by qualified workers are even lower. The average weekly hours worked was 18.5 for nursing aides, dressers and pharmacy orderlies whereas it was only 12.9 for doctors, medical assistants, midwives and nurses attending during the observation week. In total 71% of total hours of available health worker time were contributed by the unqualified group. Most units ensure that one qualified health worker is in attendance for 2 to 3 hours each day. These hours are usually familiar to community members who schedule non-emergency attendances at those times. A few units do not ensure this and most of the time, even during the short hours the unit is open, only nursing aides are available. Qualified health workers have to be sought at their homes. In Unit 8. no qualified health worker attended at all during the observation week.

Correlation analysis suggests that health workers work fewer hours where the value of drug leakage, and presumably the profitability of related work outside the unit, is high ($r=-0.66$ and -0.61 for drug leakage value correlated with total hours per worker attending during the observation week, and all facility workers respectively). The converse is true of the relationship between total hours worked in the facility and the value of informal charge income earned in the facility ($r=0.61$), even although the relationship between the outpatient attendance rate and total hours worked is weak ($r=0.30$). These correlations indicate that health workers allocate their time according to where higher incomes can be earned.

Health workers time distribution outside the facility

This question was explored further in Phase 2. Health workers were observed for six days (clinic, drug shop and ordinary shop operators) and three days (waged workers and those engaged in agriculture) and their activities throughout were recorded. Table 13 gives a summary of the results of this observation in terms of the percentage time spent in each activity. These data have not been standardised to ensure comparable time periods have been observed.

Table 13: Time allocation (%)

Primary economic activity	Private Clinic	Drug shop	Home treatment	Ordinary shop	Waged work	Agriculture
Daily activity						
Primary economic activity (as column headings)	35	43	20	33	50	31
Gardening	2	4	6	2	6	
Public health facility	11	17	22	19	12	19
Other (housework, leisure etc.)	52	36	52	46	32	50

These data confirm that clinic owners allocate least time to work at the public facility. Waged workers seem also to be especially poor attenders. In the case of waged workers, it is because their other work is most demanding of their time and they have least left over for home based activities. Clinic owners spend only an average amount of time at their principal economic activity, but allocate most time to home based non-income earning activities. Gardening is an insignificant activity for all except those who principally rely on it. This contrasts with the claims made in Phase 1 by the majority of rural health workers that agriculture is a main source of survival - although it is possible that a small number of hours is sufficient to contribute significantly to household food supplies. Perhaps the most important observation is that for all but those engaged in home treatment, the public health facility consumes significantly less of the workers' time than their primary economic activity.

Factors affecting choice of strategy{tc \13 "Factors affecting choice of strategy}

Of 196 health workers who were interviewed by questionnaire, it was possible to identify at least one known health related strategy for 78. Analyses of the qualitative information and an analysis of the characteristics of those health workers pursuing and not pursuing particular strategies inform this section.

It is clear from the qualitative evidence that there are two main factors which determine individual health workers' choice of strategy within a health unit. The first is the job of the health worker which determines his or her opportunities within the facility. The second is the amount of capital a health worker has so far succeeded in amassing which determines opportunities outside the facility and in particular whether or not they are able to set up private premises. More qualified health workers aim to set up clinics, maternity homes and drug shops. Some less qualified health workers also set up drug shops although there is awareness that this can cause problems.

Quantitative analysis confirms this evidence and suggests some further detail. Characteristics (sex, age, marital status, years of schooling, job, salary and allowance, length of service, household size, development expenditures, servants, proportion of children schooling and household expenditure estimate) were compared between those health workers identified as engaging in a particular strategy and all health workers interviewed by questionnaire.

Those identified as engaging in informal charging (54 health workers) had lower salaries and allowances (31,033/-) than the average (49,394/-), and a lower estimate of household expenditure requirements (128,021/-; average 190,727/-). It would seem that this is a strategy of less established health workers. Medical assistants were represented in proportion to the general population whereas midwives were twice as frequently observed in the informal charging group than in the population as a whole and nursing aides, 35% more frequently. Nurses were less frequently observed in this group than in the general population (13% of informal chargers and 21% of the general population). Many health workers interviewed claimed that charging in the maternity department is more lucrative than in outpatients and inpatients and this evidence (that nurses seem to be more likely to prefer other strategies than midwives) seems to support that claim. Although group employees are known to charge for

such services as fetching health workers from their homes, informal charging does not emerge as a major activity of this group. Only 2% of informal chargers were group employees compared to 11% of the general population.

Those identified as offering treatment at home (10 health workers) also had a lower wage (35,249/-) than the average (49,394/-) but had served for longer in the health sector (14.9 years compared to the average 11.8 years). This is explained by 60% of such health workers being nursing aides (compared to 36% in the general population). This activity is not confined to lower grade health workers, however. Of the remaining 40%, half are medical assistants and half midwives.

Those identified as owning private clinics, maternity homes and drug shops (21 health workers) appeared, as expected, to be the more established health workers (more senior and longer in post). Salary and allowance levels were high (59,677/-) compared to the average (49,394/-), and length of service in the health sector was greater (14.9 years compared to 11.8 years). Medical assistants, midwives and nurses were all over-represented in this group. While under-represented compared to the general population, there were also 2 nursing aides and 1 group employee identified as owning private facilities.

Waged workers (16 identified) had similar characteristics to the population as a whole. By grade of health worker, medical assistants, laboratory staff and nursing aides were over-represented in the group compared to the general population, nurses were represented in proportion to their population numbers and midwives were under-represented.

Those for whom the strategy of direct sale of drugs was identified (this is usually a relatively small scale activity relative to the cyphoning of drugs to drug shops and clinics; 15 health workers), exhibited a large number of differences in characteristics from the general population. A larger than average percentage was female (80% compared to 61% of the general population); they were younger (26 years old compared to 35 average); they had less schooling (1.8 years compared to 3.4 years) and a lower wage (28,653/- compared to 49,394/-); they had served in the health sector for a shorter period (5.8 years compared to 11.8

years); lived in smaller households (5.1 people compared to 6.9) with correspondingly lower estimated household expenditure requirements (86,659/- compared to 190,727/-). This group is dominated by nursing aides (73% of the total) and also includes only 2 medical assistants and 2 midwives. Of all the strategies, this stands out as the one pursued by the most distinct group, of younger, less qualified and less established workers.

A very small number of health workers (5) were identified as involved in the leakage of user charge revenues. Their characteristics were similar to those of the general population. They consisted of 2 medical assistants, 2 midwives and 1 nursing aide, reflecting the fact that, as a major activity, this is usually confined to one or two most senior members of the facility staff.

The following table summarises the predominant health related strategies by main grade of health worker.

Table 14: Health related strategies by grade of health worker

Strategy	Medical assistants	Midwives	Nurses	Nursing aides
Informal charging	=	+	-	+
Home treatment	+	+	-	+
Private clinics etc.	+	+	+	-
Waged work	+	-	=	+
Direct sale of drugs	-	-	-	+
Misappropriation of user charges	+	+	-	-

Key: + more likely than average to carry out this strategy
 - less likely than average to carry out this strategy
 = equally likely as the average to carry out this strategy

Impact of strategies on quality and accessibility

Quality and accessibility of care inside public health units

This section considers the impact of each of the strategies identified in Table 1, on the quality and accessibility of care at public health units. In terms of the data collected, quality is interpreted as the availability of drugs, the availability of qualified staff, and the attitudes of staff.

Three components of quality: drug and other supply availability; staff motivation and behaviour; and the state and presence of equipment and facilities, were examined in the public facilities. These correspond to process and structure of a Donabedian classification of quality⁶. Patient satisfaction and perceptions are also addressed. To this extent, the quality definition is extended to outcome, but not to the extent of including health impact. In health workers' private facilities, analysis of state and presence of equipment and facilities was carried out in a similar manner. In addition, a more detailed study of the process of the encounter between the health worker and the patient was carried out. No consideration of outcome measures was included in the assessment.

Accessibility is interpreted as the real costs of obtaining services, the opening hours of the facility, and the utilisation rate.

In addition to the qualitative evidence concerning the impact of these strategies, this section uses two sets of analyses based on the facility level data for the 10 non-hospital facilities. The first used simple correlation analysis to assess association between pairs of variables. Where correlation co-efficients are greater than 0.6, and examination of scatter plots reveals no excessive role of a single observation in explaining the correlation, associations are considered significant. The second analysis grouped facilities according to the presence or

⁶Donabedian, A. (1988) The quality of care: how it can be assessed. *Journal of the American Medical Association*, 260, 1743-8

absence of a strategy as a main strategy in each unit (as indicated in Table 1). Two-tailed T-tests with separate variance estimation were used to assess whether or not there were significant differences in quality and accessibility related variables between the two groups of units. For both these sets of analyses the small sample sizes (10 facilities) require that results are interpreted cautiously. It is only in combination with qualitative evidence that they imply policy significance. The two hospitals were excluded from both sets of analyses because much of the difference between them and the other units is explained by their hospital status alone.

Effects of informal charging

It is self-evident, and axiomatic in terms of our definitions, that informal charges reduce the financial accessibility of a unit, increasingly as they reach higher levels. In facilities with higher charges, community members complain that services become inaccessible for large proportions of the population. The levels quoted for the hospital in district 2 are clearly outside the range of affordability for the majority of the population the hospital is intended to serve. Community members often talk about people dying in their village in preference to being turned away and abused at local health facilities. These accounts are credible in the context of other accounts of the treatment those unable to pay informal charges receive. Thus, the data in Table 10 can be interpreted as comparing the financial accessibility of services between units.

Nevertheless, other factors are suggested by the quantitative analysis to be more important in determining utilisation, to the extent that there is a strong positive correlation between the outpatient attendance rate and the middle estimate of the outpatient charge ($r=0.80$). A possible interpretation of this counter-intuitive result is that health workers are able to charge at higher levels when there are elements of a better quality service being offered, and utilisation is consequently higher. Two other pieces of quantitative evidence support this. First, the correlation between the middle outpatient charge estimate and the total number of hours worked by health workers in a week is strong ($r=0.80$), suggesting that where high incomes are to be earned from informal charges (the correlation between informal charge

levels and informal charge incomes is 0.66), health workers work longer hours to obtain their share, and utilisation is higher as a result. Second, the two facilities in which there is a laboratory, charge at significantly higher rates (middle outpatient charge estimate) than those without. This confirms that charges reflect what the market will bear. A strong association between the existence of a laboratory and the community's perceptions of quality is confirmed by the qualitative evidence in a large number of the facilities.

This implies that informal charges produce an accessibility trade off. They cause a reduction in financial accessibility but increase the number of hours health workers are available at the unit. The overall effect is to increase utilisation, but higher charges are likely mainly to benefit richer members of the community who can pay, and benefit from the longer service availability hours. Those units with higher charges are frequently said by community members to be 'for the rich'.

Qualitative evidence indicates that informal charges have mixed effects on health worker behaviour, depending on the level at which the patient is able to pay. Stories of abusive behaviour levelled at those who come with insufficient cash are common in all the facilities in which informal charges are levied. This behaviour protects health workers from being too frequently bothered by patients seeking free health services, and is the enforcement mechanism of the informal charges. At the extreme are stories of patients being beaten up, their newly delivered babies confiscated until they have found cash, and deliberate reporting of incorrect laboratory results. For probably a majority of patients who can afford to pay some charge but must try to keep it to the minimum necessary, health workers' behaviour is rude and they offer services grudgingly, and with attempts to elicit further charges at frequent stages of the service delivery process. Those few patients who can offer more than the normal price for services can secure co-operative assistance and all the facilities and services the health worker is able to offer.

Quantitative analyses do not indicate that the presence or level of informal charges have a positive effect on any of the variables affecting drug availability. In fact there is a negative correlation between the middle outpatient charge estimate and the proportion of drugs

prescribed which outpatients received ($r=-0.74$). It may be that those who pay less are penalised by not receiving drugs, suggesting negative impact of informal charges on this aspect of quality.

Effects of drug leakage

Although the quantities of drugs supplied to units vary considerably, the level of drug leakage is still strongly negatively correlated with the quantity of drugs remaining at the unit ($r=-0.95$). There is also a strong positive relationship between the quantity of drugs remaining in the unit and the outpatient attendance rate ($r=0.76$), and a strong negative relationship between the leakage rate and the outpatient attendance rate ($r=-0.80$). Clearly, drug leakage, by reducing the drugs available at the unit, reduces perceived quality and utilisation. Qualitative evidence to support this from the community abounds. It is frequently said that an expectation that drugs will not be received is a reason for using alternative facilities.

The overall value of drugs leaked is negatively associated with the total number of hours worked in the facility ($r=-0.63$), and the total number of hours worked per health worker, both those on duty during the observation week ($r=-0.66$), and those seen at all during the observation month ($r=-0.62$). Thus it seems that the more drugs leak (in volume terms) the more time health workers spend outside the unit, presumably pursuing drug-related survival strategies.

The impact of each of the survival strategies which relies on the use of the facility's drugs is different, however. In units where home treatment is one of the main strategies, the drug value remaining in the unit is significantly higher ($p<0.1$), and inflation of patient attendance records is significantly less ($p<0.1$) contributing to the lower leakage rate.

Effects of ownership of clinics and drug shops

In contrast, in units where ownership of clinics and drug shops is among the main strategies, there is a higher rate of inflation of patient attendance records ($p < 0.05$), a higher rate of depletion of drug stocks without records to account for them ($p < 0.1$), a higher leakage rate ($p < 0.05$), and a higher total value of leaked drugs ($p < 0.1$). Outpatient attendance, expressed in absolute numbers and relative to the catchment population is lower. This is likely to be caused by the lower drug availability, and perhaps also by health workers encouraging patients to seek health services in their private places of business outside the unit. The number of hours worked per worker observed at the unit during the whole month is also significantly lower ($p < 0.1$) and this is further confirmed by the evidence that clinic and shop owners allocated less time to the public facility than their private business, reported above. The hospitals have not been included in the quantitative analyses but the qualitative data suggests they may differ with respect to the impact of private clinics on quality. In facility 12, it was concluded that lower level qualified health workers may operate private facilities without access to the hospital's drug supply and probably without impact on drug availability. The implications for their time spent at the hospital, and the availability of qualified staff there are likely to be equally serious, however.

Effects of user charges

All the variables related to user charge management are strongly inter-related. Total leaked user charge revenue correlates with recorded user charge revenue ($r = 0.74$), recorded user charge expenditure ($r = 0.97$) and expected user charge revenue ($r = 1.0$). Leaked user charge revenue is also correlated with outpatient attendances ($r = 0.73$). These interrelationships indicate that the proportion of expected user charge revenues which leak is fairly constant across units.

Correlations give some indication that formal user charges increase the time health workers spend in the unit. Recorded user charge revenues and expenditures correlate strongly with the number of hours worked per worker attending during the time observation week ($r = 0.88$ and 0.93 respectively). However there is only weak correlation with the estimated leaked user

charge revenue ($r=0.54$). This suggests that user charges may work to increase quality, and not only because they present leakage opportunities.

Few health workers acknowledge such a motivating effect within the qualitative evidence, however. In general, this evidence suggests that user charges do not contribute much to quality or accessibility. They seem to increase none of accountability, transparency or morale. In most units they seem to have added to health workers' sense of grievance since the more junior health workers are now forced to collect money not only for themselves but to subsidise in-charges and HUMC members. While the community complains in most units, that formal charges have simply been added to the informal charges, elementary economics suggests that there must be some trade-off between the two amounts. Informal charge incomes must be affected to some extent by the need to report some user charge income at the end of the day. In most units there is no confidence on the part of health workers in the management of the collection, by the in-charge, the HUMC, or district officers where they are involved. There is resentment at the patent inequity of the self-exemption of HUMC members, LC officials and other local dignitaries.

In some units, there seems to have been some improvement in the funding of minor expenses as a result of the user charge policy. Certainly, some group employees are paid from the resources raised, but many of the gains claimed by some are disputed by others. In several facilities the claim that drugs are purchased through user charges is disputed. There are seldom any records to support this claim and community members have not noticed the presence of the types of drugs claimed to be purchased. Most likely, if drugs are purchased, it is to further supply the private businesses of those controlling the process. In general, this problem - the funding of minor expenses at the unit - does not appear to be among the priority list of health service problems of community members. Many minor items such as stationery, gloves, needles and syringes have been incorporated into the privatized system and are available, like other service components at a price.

In two facilities, the user charge policy seems to have worked better, and to have largely replaced informal charges at the units. While these units are worthy of further consideration

assessing whether or not there are special characteristics explaining this relative success, the units are not particularly exemplary in other respects. Drug leakage is at average levels in these units, and, most importantly, the units are no more popular than others if this is measured by utilisation levels.

Effects of waged work {tc \15 "Effects of waged work}

Those units in which waged work is a main strategy do not differ from others with respect to quality and accessibility related variables.

The following table summarises the evidence concerning the impact of each of the main health related strategies on quality and accessibility.

Table 15: Summary of quality and accessibility effects

	Quality			Accessibility		
	Availability of		Staff attitudes	Real cost	Open hours	Utilisation rate
	Drugs	Qualified staff				
Informal charges	Worse	?	Mixed	Worse	Better	Better
Drug leakage	Worse	?	None	None	Worse	Worse
Home treatment	Smaller impact	None	None	None	None	None
Own clinic/ drug shop	Worse	Worse	None	None	Worse	Worse
User charges	None	Better?	Worse	Worse	Better?	None

Comparison of quality in external and public facilities

The second phase allowed structural quality comparisons between private clinics, drug shops and the homes of those engaged in home treatment with respect to the size, maintenance and cleanliness of the physical structure. The two phases together allow for comparison of the presence or absence of basic items of medical equipment between public facilities and health workers' private clinics. These were not expected to be present at the drug shops, and it was considered too intrusive to check for their presence in health workers' homes. Secondly, exit polls questioned the patients of private clinics and treated in health workers homes, on some process quality indicators relevant to the consultation with the health worker. A more general enquiry of those using drug shops: whether they had asked for specific drugs, or whether they had asked the staff member at the shop to recommend drugs, was made and is reported under '% of those polled prescribed drugs' below (Table 16). Finally, there were a number of miscellaneous relevant items of data collected: on the extent of drug issuing (tablets or capsules, and injections, allowing exploration of the drug availability situation); waiting time; and proportion of health workers qualified of those consulted. These are all presented in Table 16.

Table 16: Quality in external facilities

	Private clinics	Drug shops	Home treatment
STRUCTURE			
Total area occupied	64	24	32
Number of rooms	3.4	1.7	2.5
No. considered maintained well - adequately - poorly	7-2-0	4 - 2 - 1	1 - 2 - 1
No. for which cleanliness considered 'good' - 'adequate' - 'poor'	6 - 3 - 0	3 - 4 - 0	2 - 2 - 0
No. walled in brick - wattle	6 - 2	4 - 3	2 - 2

No. roofed by slate - iron sheets	0 - 9	0 - 7	0 - 4
PROCESS			
% of those polled:			
Seen privately ?	81%		NA
Asked to describe problem?	85%		97%
Examined?	68%		63%
Investigated (laboratory tests)?	8%		0%
Told what was wrong?	38%		57%
Prescribed drugs?	90%	56% ¹	91%
Given tablets or capsules?	90%		91%
Administered injection?	54%		71%
Administered other treatment?	5%		11%
Number of tablets or capsules prescribed per patient	18.9	19.2	18.8
Number of injections / injectibles provided per patient	0.73	0.45	0.76
Waiting time (minutes)	10		12
% health workers qualified	66%	65%	100%

¹ This is the proportion of drug shop users who were prescribed drugs rather than asked for drugs by name.

Structural quality

Private clinics are biggest, have most rooms, are more likely to be brick rather than wattle constructions, and are slightly more likely to be well maintained and kept clean. This enables a higher status image to be maintained, and probably reflects higher income earning potential (explored further below). None of the sites of treatment were considered to be 'poor' in cleanliness.

There were an average of 3 members of staff per private clinic and 2 per drug shop. In both, about two thirds were qualified at least as nurses or laboratory staff. Of those treating patients at home all four sampled had at least those qualifications.

Presence of basic items of equipment were compared between public facilities and private clinics:

Table 17: Presence of basic items of equipment in public facilities and private clinics

Presence of basic items of equipment	Public facility	Private clinic
Stethoscope	100%	78%
Sphygmometer	83%	67%
Thermometer	83%	100%
Examination couch	83%	78%
Chair for patient	100%	100%
Chair for clinician	100%	100%
Table	100%	100%
Steriliser	92%	67%
Laboratory services	42%	11%

All the private and public facilities possessed the most basic furniture for consultation (tables and chairs) but 2 of the 9 private clinics and 2 of the 12 public facilities lacked an examination couch. Among items of diagnostic equipment on the checklist, all had a thermometer, 2 lacked a stethoscope, 3 lacked a sphygmometer and only 1 could offer laboratory services. Among public facilities, all had a stethoscope, 2 lacked a sphygmometer, 2 lacked a thermometer and 5 out of 12 (including the two hospitals) offered laboratory services. 3 private clinics lacked a steriliser whereas only 1 public facility lacked this piece of equipment. The slightly better performance of public compared to private facilities reflects the physical rehabilitation efforts in the public sector. There are still unacceptable absences of very basic equipment in both settings however.

Process quality

Comparison of process of consultation indicators suggests that those offering treatment in their homes performed better than private clinics in a few respects. More home treaters asked the patient to describe their problem and explained to the patient what they thought was wrong. In contrast, clinicians in private clinics were slightly more likely to examine the patient and the only health worker capable of offering laboratory tests operated a private clinic. It was assumed that all those seen at health workers homes were seen in privacy and this question was omitted from the relevant exit poll. In other respects the two groups performed similarly (see Table 16).

Health workers engaged in home treatment administered injections to a higher proportion of patients. (Nevertheless, health workers in private clinics administered almost as many injections in total. They injected a smaller proportion of patients a higher number of times each.) This is a well known problem in the health system of the country as a whole. In Busoga, the larger area of the country in which our South Eastern district is located, 68% of prescriptions at a mix of health facilities have been found to contain injections⁷. This is comparable to the 71% of patients who had received an injection among those treated in health workers homes, and higher than the 54% who received an injection in private clinics.

Similar numbers of tablets and capsules were issued from each type of facility, and some tablets or capsules issued in at least 90% of cases in all settings, suggesting sufficient drug supplies in all three care settings. The number of injections or injectibles issued in drug shops was substantially lower than in the other two settings. This may be because, perhaps surprisingly given other studies on this subject^{8,8} few drugs shop owners actually administered injections. Nevertheless, they presumably prefer to offer complete treatment.

Patients waited slightly longer for health workers in their homes. There is a bimodal distribution of waiting times however: when health workers are already there on the patients' arrival, waiting times are short but at other times health workers have to be sought from wherever they have gone and waiting times are longer.

Conclusions

Introduction

⁷Van Staa, and Hardon, A. (1996)

⁸Odoi Adome, R, Whyte, S.R. and Hardon, A. *Popular pills: community drug use in Uganda*, Community Drug Use Studies, Het Spinhuis, Amsterdam, 1996.

This research has attempted to access the 'hidden' aspects of health care delivery in Uganda. Most research stops at what is officially acknowledged and accepts the accounts of those within the system at face value. As a result, the findings of this research may seem unusually bleak.

It should be remembered that Southern Uganda has returned to peace and stability for not much more than a decade and that while the surface of a society can respond quickly to a new situation, underlying characteristics must be expected to take longer. The types of activities explored here have been the basis of survival of health workers during a critical period in which survival could not be taken for granted and required both entrepreneurship and prioritisation of self interest. It is probable that they will not be given up lightly or without a substantial level of confidence in alternatives.

In the light of this perspective, progress must be measured in small units. Much progress has been made in policy development and in the articulation of the issues affecting the health sector. That much of this is yet to bear fruit in effective delivery of services to those who need them, should not be interpreted as the failure of the efforts which have been made. This is a long process to which this study hopes to contribute. Nevertheless, recognition that the public health system largely fails to effectively deliver services to those who need them is an essential part of that development process and the evidence of this study makes clear that this is the case.

This research has not addressed the question of how amenable to change health workers are. Research to follow-up this study will most usefully address whether or not a change of culture within the health services, and a new generation of health workers is required, or whether the putting in place of key measures which attempt to change the incentive structure in the system could suffice. What some of these measures might be forms the main focus of this discussion section.

The impact of health workers socio-economic survival strategies on the public health system: a summary

The situation described by the preceding results suggests that almost all elements of the system which were once public have been incorporated into the private business activity of the health workers. More than half of the drugs supplied to public health units have become the private property of health workers. The estimated drug leakage rate of the median facility was 78%. This did not count the sale of drugs within the facility and biases in favour of under-estimating the leaked proportion. Health workers often resell these drugs in their own private premises ranging in character from their homes to established medical clinics. All health facilities counted at least one of ownership of clinics, drug shops and maternity homes, and home treatment among the major strategies identified there. Of the 78 health workers for whom strategies were identified in Phase 1, such strategies were engaged in by 31 (40%). Public health facility premises have often become the sites on which private transactions for health service delivery are conducted. 54 of the 78 health workers (69%) were identified as engaging in informal charging. Frequently, public laboratories and radiography departments are effectively the shops of the staff there, where they sell test results and X-rays. In the large urban district hospital studied (facility 12), the privatization is more developed and explicit. Patients pay for their operations at private clinics and are referred to the hospital to have them carried out. Those who attempt directly to access the services of doctors are ignored until they have negotiated a private fee. Although more of the drugs supplied to this hospital seem to reach the patients there than in other units, they form part of the negotiated transactions for services in the hospital.

The result is that very few free services are delivered in the public health facilities, and almost none at all are delivered to the poor. Two groups who sometimes receive free services - those with some authority over health workers, and prisoners (presumably because prison governors have some authority over health workers)- have been identified. The treatment of those who seek free services but do not fall into those categories has been described graphically in numerous community reports. They are chased away, beaten up, abused, and frequently comment that they regretted attending. In this light, reports that people 'die in the villages' (an extremely common expression) rather than attempt to seek free services are unlikely to be exaggeration.

Conclusions for consideration by Ugandan policy makers

At this time, the decentralisation policy and the growing culture of democracy offer substantial opportunity to enforce greater accountability for health service delivery on the part of district administrations and incentive for administrations to enforce greater accountability on those within the health sector. There seem to be a few important policy areas which offer scope to intervene in the situation - the area of policy around salaries, allowances and personnel; regulation of the private sector; public representation at the health unit level, including the community's role in setting and regulating user charge policy; other aspects of user charge policy; and drug management. Much has already been done in each of these areas, and there is clearly an awareness of where problems lie among policy makers. What follows is a discussion of what has already been done, and what scope there may be to progress further in the shorter and longer terms.

Salaries, allowances and personnel policy

Average incomes in the health units are moderate but hide a probably highly skewed distribution between health workers. A few earn substantially, combining dominance over the main sources of income generated by the facility with lucrative private clinics. These invest in development activities and employ servants at their homes. Their living standards are characterised by ownership of consumer durables and comfortable and sizable homes. Others manage a decent standard of living and are able to educate their children. A further large group (mainly nursing aides and group employees) fail to do this. They have poorly maintained homes, few luxuries and fail to educate their children. Drug related incomes dominate in the facility's income earning capacity. The second most important source is usually informal charge income. In two facilities this element appears to have been replaced by formal user charge related incomes. Salaries and allowances typically amount to only 20% to 50% of drug related incomes.

Most commentators aware of the situation in the health unit have blamed the problem on salary levels. These must have played an important role, most clearly during the 1980s where levels were below minimum subsistence and all health workers must have needed some additional means of survival. The situation has improved today but salary levels are still below the reasonable expenditure levels of the average health workers' household. This level varies by district and facility but is somewhere between 100,000/- and 200,000/- per month. Even this only allows health workers to consume at the average level of their communities, whereas, as more educated members of the community, their expectations must be to fare considerably better than this. On this basis, 200,000/- monthly must be considered the minimum level which could be considered fair by the average professional health worker. For less educated health workers such as nursing aides, salaries of minimum level 100,000/- might be considered both fair and usually adequate since most are young, and without families. Group employees need to be paid at the market rate for their time and skills. Otherwise, they will assume they are expected to supplement their incomes in other ways.

Clearly, there is awareness of the need to increase public sector salaries at the highest levels of government. Considerable progress had been made and substantial salary increases were implemented in the 1996/7 budget. The levels of salary suggested as minimum, are still somewhat higher for all except the most senior medical assistants than those resulting from the national level salary increases however. Clearly there are difficult trade offs between sectors in allocating what new resources do become available between civil servants. Given the unusual opportunities for health workers to undermine the work of the sector in their efforts to supplement their salaries, there may be a stronger than average case for separating health workers from the scales and conditions associated with public service in general.

Some innovative districts have implemented substantial salary supplements and have exploited the potential to appoint individual health workers, such as District Medical Officers at high points of the civil service scale in order to try to address the types of problems exposed here.

Combining the study's conclusions on salary levels and time inputs of facility level health workers, there would seem to be considerable scope, especially at district level, to consider combinations of further retrenchment and salary increases that need not increase the total salary budget but would enable a smaller number of hard working health workers to receive pay commensurate with their efforts, and by doing so perhaps increase the total effort put into the service for the same investment. A starting point would be to reallocate staff to match even the reported utilisation rates of rural health units.

Such a proposal would currently be extremely unpopular. One thing that community members and health workers are all agreed on is that more rather than less health workers are needed. This perspective is probably motivated on the health workers' side by the assumption that more health workers would enable even shorter hours to be worked and therefore allow more attention to private business. On patients' side, it is understandable that their perception of current availability of health workers is far below the nominal position. Nevertheless, it is not inevitable that health workers would always oppose phased number reduction. In many countries there is understanding that restriction of numbers increases market power. It is likely that health workers' previous experience of retrenchment, which did not quickly result in substantially increased salaries leads them to be skeptical on the subject. Patients and the public will likely only notice the number of health workers and qualified health workers attending at health facilities, not the total number in the community. The proposal is intended to improve this.

The policy measures implemented in some districts suggest a unique opportunity to explore the responsiveness of the issues addressed by this study to intervention. Senior policy makers may wish to consider mobilising support for further research in this area.

However, salaries are only one aspect of a motivation system which is currently failing to promote good health worker performance. It is a priority, although a long term task, to develop alternative incentive systems which reward good performance and offer an alternative set of aspirations for health workers to the development of private businesses. Again, at national level there is clear evidence of awareness of the need for reform in this

area, and understanding of the difficulties of developing effective systems. All national Ministry of Health personnel have recently (in 1996) had their job descriptions and grades reviewed. This is an important pre-requisite to any performance related incentive system. Policy measures are under discussion at the national level to further this objective.

For district level health workers in the two districts studied, promotion has been extremely rare and only occurs where a higher position falls vacant. Health workers are not regraded as a reward for good performance while retaining the same position, and there are no regular or performance based salary increments.

Until recently, there has been an absence of transparency in the system used to allocate training opportunities. Health workers in rural units have felt excluded. While a reasonable proportion of health workers have undergone in-service training and refresher courses related to their responsibilities, there has been an absence of training opportunities linked to promotion prospects and an absence of systematic reward for performance in the training system. Partly as a response to earlier dissemination of this study, it has been decided to implement a system of rural bias in allocating training places. Candidates for support for Masters training must have served a minimum of two years in a genuinely rural setting. The first beneficiaries of this policy will commence their training programmes this year.

For a culture which values good performance to develop, these measures will need also to be developed. Clearly, there are difficulties within the present system in identifying good performers and a risk that such measures simply extend patronage. Initial focus on rewarding performance at the district level according to measurable and independently established criteria of good district performance might enable performance based reward systems to develop at facility level in the longer term. A more reliable district level could act as the monitor of a fairly implemented system.

Currently there is also an absence of ultimate sanction applicable to poorly performing health workers. An extreme example of both community exasperation with their lack of voice in the health system (see the next section), and of their disapproval of health worker behaviour, is an

assault on the ex-in-charge which occurred in facility 9. The sanction eventually applied to this health worker was his transfer to a nearby hospital which was widely seen as a reward by his ex-colleagues. While current salary levels are derided as incentives by health workers, the threat of loss of access to the means of livelihood accompanying health worker status would be a serious sanction for most. Increasing the opportunity for dismissing health workers requires transparent processes and criteria. It also requires a delicate judgement about the appropriate balance between incentives and sanctions and the political factors involved since health workers and especially doctors form a vocal political group, as witnessed by the recent strike (September 1995).

Eventually, allowances and salaries need to be merged and their rates determined according to explicit criteria, so that the pay scales applied are more transparent and recognised as fair by health workers as a whole. At present, differences in allowances paid at different levels of the system and according to the different jobs carried out by similarly qualified health workers cause resentment and further losses of morale. Particularly singled out by rural health workers are the recent increased allowances paid to hospital workers. These have caused rural workers to feel less valued and discriminated against. The bonuses have achieved no clear benefits in the two hospitals studied, but the bitterness caused in rural units has been enough to dominate some health workers' focus group discussions. Raising of this issue raised a cheer at one of the district dissemination meetings. Feelings of resentment among rural health workers are very high indeed.

Regulation of the private sector

Ownership of private clinics and drug shops by public health workers has emerged as the strategy with the most serious effects for quality and accessibility of public health services pursued by health workers. This is the conclusion of the analyses summarised in tables 6, 7, 8, 13 and 15. This strategy reduces drug availability, the opening hours of facilities, the availability of more qualified staff in facilities and utilisation. All the evidence suggests that the strategy concentrates the incomes generated by the facility in one or two health workers and enables them to earn considerably more than could be considered a reasonable wage. This

means those left are less likely to be able to generate an income at the facility and are more likely to seek their livelihood outside. While quality does not appear to be especially bad at these external facilities, they tend to substitute rather than complement public sector care and thereby remove health service delivery from within the ambit of public sector management. While measures to ban the ownership of private facilities by public health workers are unlikely to be completely effective, putting as strong as possible measures in place may help to reduce the worst abuses, and is a measure frequently directly requested by community members themselves in rural areas. Evidence that clinics run by public health workers are diminishing in numbers would be a clear sign that public health sector development is taking place while their continued growth would be a sign of failure to achieve this.

As is well known in the regulation literature, this type of situation produces some of the most intractable problems of regulation. The problem is remote from the centre of government activity, it involves large numbers of anonymous actors (owners of clinics) and these owners have a high stake in the perpetuation of the status quo. It is generally accepted that attempting to outlaw such clinics is counter-productive. There is greater potential for positive impact in sanctioning at least the least problematic types of clinic and enabling dialogue, monitoring and support between the public and privatised activities. On this basis, the district medical team could attempt to ensure that clinics met a higher number of criteria for operation (perhaps for example that a clinic's opening hours do not conflict with the duty shift of the health worker who owns it) and to minimise the undermining impact of the clinics on the public health system (by checking on an expanded tour of supervision visits that drugs in the clinics were not those supplied to the public health facility, for example). These examples are for illustration only. A programme of trying to integrate at least those private clinics of public health workers into the public health system would need to be considered carefully and in detail, to an extent not possible within the boundaries of this study.

Public representation in the management of health units{tc \13 "Public representation in the management of health units}

Current arrangements for representing the community in the management of health facilities in the form of the HUMCs work poorly and even counter-productively in the majority of cases. Again, the Ministry of Health has been aware of the problems and has been developing and piloting a new set of guidelines which may make an important contribution to resolving some of the problems.

The system of appointing HUMC members was not known by any community member consulted. A few had heard of the existence of the committee. These viewed it sceptically and did not anticipate any benefits for patients to result. Most were unaware it existed. No tangible example of a benefit resulting from HUMC activity was cited by any community member. Equally, from health workers' perspectives the HUMCs are counter-productive. They are not credited with any improvements at the unit and are accused of corruption and self-serving behaviour. They are another source of leakage of drugs and misappropriation of user charge revenues. They award themselves large sitting allowances and other benefits and at one of the hospitals, advantageous contracts to supply goods. While health workers participate in the committee, they are in a minority and powerless to represent health workers' interests there. The health worker representative on one of the hospital committees had given up trying to argue for a fairer balance between HUMC sitting allowances and health worker motivation allowances, and resigned after he was threatened with organised violence. No other worker had been found to take his place. The national guidelines to be implemented specifying the expected frequency of HUMC meetings and levels of sitting allowances will be extremely helpful. Measures to improve accountability of the resources under HUMC control are also timely.

The guidelines have proposed a number of sensible measures to improve accountability. Another proposal which arose during the dissemination workshops is to emulate a system used by some NGOs, and post user charge accounts on a blackboard outside the health facility. This would not prevent all forms of false accounting but some of the most overt could be curbed. For example, the accounts could not claim that someone had been paid who had not, or that large items had been purchased which were not visible to the patients. More importantly perhaps, such a system might increase the faith of all involved in the policy, and

prompt patients to ensure they obtain receipts so that their payments are sure to reach the accounts.

In addition to the guidelines, there is also a need for improved selection processes so that the public can exercise an authentic voice through the committees. The local councils (LCs) are the system of grass roots democracy in Uganda and it is appropriate, whatever their current shortcomings, that they be used to improve the accountability of health services.

Nevertheless, it is clear that this currently implies that appointment of HUMC members forms part of the system of political favour trading. Ways might be considered to raise the political profile of health services at local election time, such as a campaign aiming to make community members aware of the HUMCs and their LCs' role in appointing them, sponsored by the Ministry of Health.

A representative community committee could enable substantial improvement in health worker performance. Once there is some confidence in its representation of the community, it should certainly play a role in the performance related incentive system and more flexible recruitment and retention policy discussed in the previous section of this Discussion. Only such a committee would be able to monitor and improve the accountability of user charge revenues and drugs since central attempts to ensure this are likely to be too little spread too thinly. Locally, a committee could play a part in ensuring that user charge revenues and drug stock depletion reflect utilisation levels and exemption levels actually practised. With the sanction of a role in dismissal and promotion decisions, it might be possible to bring health workers found to be selling drugs with essential drugs labels to account.

User charge policy

The findings of this study, and others⁹ suggest that user charge policy has not been successful. User charges have only replaced informal charges in two of the 12 facilities studied. In others,

⁹Health Care Financing: *Proceedings of the dissemination seminar 'Health and Economics in Uganda'*, International Conference Centre, Kampala, March 7th 1995, seminar organised by Child Health and Development Centre, Makerere University in collaboration with Ministry of Finance and Economic Planning and Ministry of Health with support from UNICEF and SIDA

qualitative evidence suggests that user charges both add to the total amounts paid by patients and subtract from the total amounts received by lower level health workers. Higher level health workers and members of HUMCs seem (as in other contexts) to be the only gainers from the policy. In their favour, the analysis summarised in Table 15 suggested that they might increase both the presence of qualified staff and opening hours in public health facilities. However this suggestion is far from conclusively established.

Nevertheless, a user charge policy, implemented and monitored by a representative community committee could play a role in developing the health system. The main objectives of the system would be to ensure there are always sufficient funds for small scale recurrent expenditures where other sources may be unreliable, and to offer incentive allowances to health workers, closely related to their work effort and success in attracting patients to the facility. Supplementing of drug purchases should not be among the purposes of revenues collected, although this might be reviewed if utilisation levels attain far higher levels than at present. In the foreseeable future it should be expected that drug need increases associated with utilisation increases are absorbed by drug leakage reductions. At present these objectives are frustrated by poor accountability.

Evidence of the study supports the Ministry's current guidance that flat rate fees should be avoided. They are universally considered unfair. This is attested by numerous comments from both health workers and community members. In a context where there is a high awareness of the market value of different drugs, cross-subsidisation will always be unacceptable to net losers. A flat rate consultation fee accompanied by a fee based on the drugs supplied, and any laboratory tests or X-rays carried out would be much more acceptable to the population.

Drug management

The problems encountered by those who have tried to manage a centrally organised drug distribution and management system are clear from the evidence of the study. Even identifying levels of leakage, as done by this study, required a level of engagement in each health facility that a centrally organised programme could not hope to emulate. Solutions to

the problem originating in new management procedures operated from a central level will unlikely prove feasible. Feasible solutions will undoubtedly be decentralised.

In some districts, including one of the study districts, a system of selling of drug kits to health facilities by district health offices has been implemented. The intention is that revenues are drawn from the user charge revenues and are used by district health teams to strengthen monitoring and supervision. This has caused some health facilities in the relevant study district to drastically reduce the number of drug kits purchased owing to lack of user charge revenues. Given the levels of leakage, this may not have important implications for availability of drugs in the facility, but simply redistributes resources between facility health workers and the district health office. Since the supervision system does not achieve its aims, and is widely seen by facility health workers as a means of district team members' sharing in the resources of the health facility, the system does not achieve its objective. Incentives at the local level remain unchanged.

As with accountability for user charges, effective HUMCs could provide the solution to this problem. This has been discussed above.

An alternative solution is the setting up of privatised pharmacies associated with public health facilities. This is currently the system used at Jinja hospital and it would be advisable to study the experience there carefully. If it is acknowledged that drugs are currently not distributed freely to those most in need, then objections to this proposal based on considerations of equity are flawed, unless a solution involving free distribution of drugs can be shown to work. A formally privatised drug distribution system would have several advantages over the present informally privatised system. It would enable standards of drug dispensing to be monitored and ensure as far as possible that only qualified workers were involved. This would help tackle the enormous problems of drug resistance which the current system is at least partly responsible for. It would prevent health workers cyphoning drugs to their own facilities and probably as a result, increase the time they devoted to working in the public facility. It would be possible to experiment with exemption policy options such that at least chronic diseases, and diseases of public health significance could be treated urgently whether

or not the patient could pay for drugs. Such a system might also offer the Ugandan government the opportunity which has long been sought to take over the financing of essential drugs from the Danish Aid programme which might in turn be persuaded to support policies to improve the motivation and well being of health workers directly instead. The Ugandan government might consider setting up a few privatised pharmacies in which essential drugs would be sold in association with prescriptions from adjacent public health facilities, on an experimental basis.

Conclusions of international relevance

It seems likely that a large number of countries around the world of widely differing characteristics face a similarly widespread informal activities of public sector health workers. Countries which have been torn by conflict such as Cambodia, Angola and Mozambique¹⁰, others in which there has been a more peaceful transition from centrally planned to market economies such as Vietnam, China and the countries of the former Soviet Union¹¹, and anecdotally countries which are just poor and have been tempted to ignore cost of living increases in settling salary levels such as Bangladesh and Tanzania. None of the documented cases cited are able to describe the scale of activities to the extent that has been done here and it is unknown whether issues in these countries are similar to or different in important ways from the situation we have described in Uganda.

This study offers a tested methodology which we believe has worked well to describe the extent of the problem and to answer some simple questions such as identifying the types of activity pursued by different types of health worker, and to explore the relative implications of different strategies for the quality and accessibility of care at public health facilities. We believe this methodology could be used in other settings with one caveat. Ugandan health

¹⁰Ferrinho et al. (forthcoming)

¹¹Witter and Ensor (forthcoming)

workers are quite open about their situation. This probably results from the complete absence of sanction which has been discussed in the previous section. In other settings it may be more difficult for researchers to gain the trust and participation of health workers and the 'detective' aspects of the methodology may carry more risks. The details of the methodology are available in the first two appendices to this report and could be adapted according to local circumstances for use elsewhere.

Given lack of knowledge about the similarities and differences of the Ugandan situation to others, it is difficult to be clear as to which of the conclusions drawn above for Uganda might have international potential to improve the results of a semi-privatised public health system. In most countries there is likely to be a difficult trade off between the numbers of staff who can be employed and their salary levels. To the extent that inadequate salary levels explain informal activity, this is an issue which every country in this situation will have to address. Second, recognition that 'informal' activity constitutes 'privatised' activity, solutions which privatise aspects of the public sector may constitute a 'least worst' way forward. The importance of maintaining a public structure of regulation and monitoring should be stressed, however and measures to ensure this given at least as much priority as those instituting privatised entities.

The clear global lesson from the results of this study is that ignoring cost of living increases in budgeting for the health sector (and probably any other sector) is no more a viable option than ignoring drug price increases and expecting the budget to buy the same quantity and quality of drugs. Somewhere the circle is squared and the kinds of implications we have traced in Uganda are inevitable. While they are avoidable by those countries yet to encounter them, they may be far more difficult to reverse. Once health workers have learned a self-reliant means of survival which at least for a significant minority is extremely lucrative, they only with difficulty return their faith to a government system which has proved itself unreliable and even at best, much less lucrative. Uganda's fast growing economy and pace of democratisation offers the best possible opportunity to intervene to improve standards of public health care and its progress towards this goal will be worthy of attention.

Annexes:

Study protocols, phase 1 and 2

Publications as listed overleaf

List of references of the publications and oral communications concerning the research carried out under the contract

Written

McPake B., Asiimwe, D., and Mwesigye, F. Health for All: An Impossible Dream? The Monitor, April, 1995 (attached)

Asiimwe, D., Mwesigye, F., McPake, B., and Streefland P., Informal Markets and Formal Health Financing Policy, Interim Report (previously submitted to the Commission)

Asiimwe, D., McPake, B., Mwesigye, F., Ofumbi, M., Ortenblad, L., Streefland, P. and Turinde A. (1997) The private-sector activities of public-sector health workers in Uganda in Bennett, S., McPake, B., and Mills, A. *Private Health Providers in Developing Countries: Serving the Public Interest?*, Zed Press (attached)

McPake, B., Asiimwe, D., Mwesigye, F., Ofumbi, M., Ortenblad, L., Streefland, P., and Turinde A., *Informal economic activities of public health workers in Uganda: implications for quality and accessibility of care*, to be submitted to a relevant international journal (current draft attached)

McPake, B., Mwesigye, F., Asiimwe, D., Ofumbi, M., Ortenblad, L., Streefland, P., and Turinde A., *The implications of Uganda's user fee policy in the context of widespread 'informal' charging and other informal economic activities of health workers*, to be submitted to a relevant international journal (current draft attached)

Oral

Asiimwe, D., McPake, B., and Mwesigye F., Oral presentation of the interim report in a series of small group meetings with the following officials: Director General, MoH, Acting Commissioner Health Services (PHC), Acting Commissioner Health Services (E/C) Commissioner Planning Rene Christiansen, Resident Health Advisor, EC, John Akin, Resident Economist, World Bank

Asiimwe, D., and Mwesigye, F., Oral presentation of interim report, Workshop for Ministry of Health (report of workshop attached)

Asiimwe, D., and Mwesigye, F., Oral presentation of interim report, Workshop for Ugandan researchers (report of workshop attached)

McPake, B., Informal markets and formal health financing policy: seminar, (presentation based on interim report to Health Policy Unit Seminar Series, October 1996)

McPake, B., Informal markets and formal health financing policy, short presentation to ODA (now DFID) health advisors' annual meeting, October 1996

McPake, B., Informal markets and formal health financing policy: seminar (presentation to Nuffield Institute for Health Services, University of Leeds, June 1997)