PN-ABN-424
81164

AGENCY FOR INTERNATIONAL DEVELOPMENT
PPC/CDIE/DI REPORT PROCESSING FORM

ENTER INFORMATION ONLY IF NOT INCLUDED ON COVER OR TITLE PAGE OF DOCUMENT

1. Project/Subproject Number: 9365948

2. Contract/Grant Number: DPE-5948-Q-9030-00

3. Publication Date: 2/1993

4. Document Title/Translated Title:

Malaria in Malawi: Knowledge, Attitudes and Practices
Findings from a Nationwide Household Survey Conducted in March-May 1992 by the Community Health Sciences Unit, Ministry of Health, Lilongwe, Malawi, Nov. 1992

5. Author(s)

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6. Contributing Organization(s)

7. Pagination: 94p.

8. Report Number: 82240

9. Sponsoring A.I.D. Office: R&D/H/CD

10. Abstract (optional - 250 word limit)

11. Subject Keywords (optional)

1. Malaria
2. Comunity Health
3. Malawi
4.
5.
6.

12. Supplementary Notes

13. Submitting Official: Robert W. Lennox, Sc.D.

14. Telephone Number: 703/527-6500

15. Today's Date: Feb. 19, 1993

DO NOT write below this line

16. DOCID

17. Document Disposition: DOCRD [ ] INV [ ] DUPLICATE [ ]

AID 590-7 (10/88)

PN-ABN-424

VBC PROJECT

Tropical Disease Control for Development

Malaria In Malawi: Knowledge, Attitudes and Practices

Findings from a nationwide household survey conducted in March-May 1992 by the Community Health Sciences Unit, Ministry of Health, Lilongwe, Malawi

November 1992

by

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VBC Report No. 82240

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Acknowledgments

Preparation of this document was sponsored by the VBC Project under Contract No. DPE-DPE-5948-Q-9030-00 to Medical Service Corporation International, Arlington, Virginia, USA, for the Agency for International Development, Office of Health, Bureau for Research and Development.

The authors would like to thank all members of the survey team, particularly the team leaders: Miss Charity Golombe, Miss Rose Mapando, Miss Elizabeth Sassani and Miss Caroline Phiri. Dr. Johanne Nyasulu and Mr. Edwin Nkhono provided invaluable supervisory and training assistance, without which work could not have proceeded. Mr. Louis Msukwa of the Centre for Social Research made extremely useful comments on initial versions of the questionnaire, which improved it immensely. Staff of the Mangochi Malaria Research Project assisted with data checking and cleaning. Comparative findings from other KAP investigations were kindly made available by Cathy Thompson of Project Hope and by Suzanne Blogg of the Salima Agricultural Development District. The District Health Officers of the districts surveyed provided liaison with local officials and insight into the local malaria situation; Drs. Julian and Kate Hargreaves allowed researchers to examine first-hand the records, laboratory and staff of their hospital in Rumphi. Local village heads and health volunteers played a significant role in the

survey, offering a welcome, introduction, directions, and, in many cases, lunch to the survey teams. Although they are not mentioned individually by name, this survey would never have been accomplished without the untiring cooperation of many, many health surveillance assistants, village health workers, and household men and women. Thanks to them all.

Acronyms

ADMARC	Agricultural Development Marketing Corporation
ANC	Antenatal Clinic
CDC	United States Centers for Disease Control and Prevention
CHSU	Community Health Sciences Unit
EA	Enumeration Area
GOM	Government of Malawi
HH	Household Head
HIS	Health Information System
HSA	Health Surveillance Assistant
KAP	Knowledge, Attitudes and Practices
MOH	Ministry of Health
MK	Malawi Kwacha (currency)
NMCP	National Malaria Control Programme
SLADD	Salima Agricultural Development District
SP	Sulfadoxine-pyrimethamine
TA	Traditional Authority
TBA	Traditional Birth Attendant
UN	United Nations
VHW	Village Health Worker

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1. Executive Summary

To provide policy makers and managers in Malawi with the necessary background information to modify existing programs, devise new programs, and establish epidemiologic and behavioral baselines against which program accomplishments can be measured, a nationwide survey of knowledge, attitudes and practices (KAP) regarding malaria was carried out between March and May 1992. This population-based survey was carried out by the Community Health Sciences Unit of the Malawi Ministry of Health with support from USAID/Lilongwe and technical assistance from CDC and the VBC Project.

The survey was carried out in the three regions of Malawi during April and May 1992, the period of peak malaria transmission at the end of the rains. The survey instrument, a structured interview questionnaire, had six parts:

- data on household composition and recent malaria incidence,
- malaria incidence, treatment and costs in adults,
- malaria incidence, treatment and costs in children,
- malaria in pregnancy and measures for its prevention,
- use of and costs of measures of malaria prevention, and
- household income and its composition.

Fifty-one households in each of 30 randomly selected communities were sampled, resulting in information on 1,531 households and 7,025 individuals. Average household and per capita income were MK 1,470[1] and MK 368 respectively, figures that agree with other recent estimates. Most household engage in agriculture production; the average plot size is 2.4 acres.

Considerable variation in income was reported, with the great majority of Malawians earning very little (52% of all households were found to earn less that MK 500 per year), and a relatively small segment of the

[1]All monetary values are expressed in Malawian Kwacha. The exchange rate in March 1992 was approximately US$ 1.00 = MK 2.50. There was a devaluation in April 1992 to a rate of about US$ 1.00 = MK 3.00.

population earning several times as much, primarily because of non-farm salaries and business income. Families headed by females were found to have smaller plots, lower incomes and less education.

Findings

Malaria frequency and duration

- One out of three persons surveyed was reported to have had an episode of fever presumed to be malaria during the preceding 14 days. Among under-fives the percentage was 45%.

- Children under 10 years of age in Malawi are reported to experience an average of 7.6 episodes of malaria per year. Adults are estimated to have about three episodes.

Malaria prevention

- Seven percent of households reported owning a bed net, and 16% use mosquito coils.

- Among recently pregnant women, 93% reported having attended an antenatal clinic at least once during that pregnancy, and 74% of attenders reported having been given chloroquine for malaria prophylaxis.

Malaria treatment

- Approximately half of people reporting fever presumed to be malaria presented to a clinic or other health facility for diagnosis and treatment.

- In 53% of cases, self-medication with drugs acquired from shops, neighbors or other sources was reported.

- Treatment using traditional methods and by traditional healers could not be determined from this survey.

- In under-fives with "non-severe" fever presumed to be malaria, 88% of children received an antimalarial drug within 48 hours of onset of the fever.

- In children under ten with "severe" malaria, 84% received an antimalarial within 48 hours of onset, about half within 24 hours.

- Among under-fives given antimalarial drugs, three out of four were given an incorrect dose according to the Malawian treatment recommendations.

Economic impact

- Annual expenditure on prevention averaged MK 7.44 per household.

- Out-of-pocket expenses to obtain treatment for a malaria episode averaged MK 1.61 for children under 10 and MK 2.29 for those 10 and over.

- 1.2 days of productive parent or guardian time was reported lost per case in children under 10, 2.2 days for cases in older individuals. The value of indirect time lost averaged MK 1.84 for cases under ten and MK 3.37 for those older than 10.

- The total cost of malaria prevention and treatment in Malawi, MK 101 per year, represents 7% of average household income and well over a third of the income of the poorest half of households.

Policy Implications

The findings of the community survey were reviewed by the Community Health Sciences Unit with a view to providing policy guidance to the Ministry of Health in activities relating to malaria control. Recommendations were grouped into programmatic indicators for planning and management, constraints affecting Malawian access to malaria services, messages for health facilities and workers, communicating with families

and the community, and economic costs at the household level. This last area, the assessment of the economic costs of malaria in Malawi, represents an area of special interest that will be expanded in a separate report.

Program indicators

- The number of malaria episodes per individual per year, found in this survey to be 7.6 for children under 10, helps demonstrate the importance of malaria to child health.

- The percentage of children treated with antimalarials is one indicator of appropriate treatment. The fact that this survey found it to be 63% shows that considerable improvement is needed.

- The percentage of malaria patients, particularly those with severe malaria, taken to a health facility, and the time in which that occurs, are indications of the accessibility of services and the degree of response from the community.

- The percentage of pregnant women attending antenatal clinics and given chemotherapy during pregnancy is an excellent measure of access to and compliance with this prevention method. Knowing what percentage actually take the drug regularly for the period expected would be very helpful.

Constraints to access to malaria services

- Considering the limited income of most Malawians, the affordability of any malaria control interventions proposed and promoted must be considered when setting policy.

- A mother's perception of disease severity is an important determinant of health services use.

- The finding that half of the antimalarials used come from shops and vendors or home supplies must be considered when determining policies for drug distribution and recommendations for treating fever.

Messages for health facilities and health workers

- One-third of cases treated by health facilities are at CHAM or other non-governmental units; they should be targeted along with those of the government.

- Limited understanding, among health workers as well as household respondents, of proper choices of drugs and dosages to be used for malaria indicate a need for greater attention to treatment guidelines given at health facilities and for messages to patients.

Communicating with families and the community

- Shopkeepers and pharmacists are important target audiences.

- Understanding of proper dosages for children is inadequate (less than 30% in this survey) and deserves emphasis in messages to families. This is particularly important as Malawi embarks upon a complete change in first-line drug and dosage.

- Messages about mothers' perception of fever, its severity and the need for prompt action, are important and must be appropriate for a largely uneducated population. Malaria in children and during pregnancy should be particular foci.

- There is room for much improvement in knowledge about malaria transmission (only 55% percent of respondents said that mosquitoes transmit malaria) and in prevention options and their use.

- Since only 30% of Malawian homes have a radio, a variety of communications channels must be used.

Economic costs at household level

- Current expenditures at household level for malaria treatment and prevention reflect a tremendous drain on family resources. A willingness to pay for malaria-related products and services is apparent, but the mix selected may not be the most appropriate.

- If widespread coverage and access to malaria interventions are expected, they must be affordable to a population in which half of the households earn less than MK 500 per year.

2. Introduction

Malaria in Malawi

Malawi, with an estimated 8.8 million population in 1991, is located in south-central Africa. The country's economy is predominately agricultural, with agriculture accounting for 37% of gross domestic product (GOM, 1990). After a period of economic expansion in the 1970s, Malawi has been experiencing economic difficulties.

The Ministry of Health budget for 1992-93 is estimated at MK 84 million, or approximately MK 9.58 per capita. This budget represents a 6.7% increase over 1991-92 expenditures for health.

Malaria remains one of the foremost health problems in Malawi. In 1990, according to National Health Information System data, 35% of all outpatient attendances were malaria-related. Malaria and anemia (often associated with malaria) together account for 41% of hospital admissions and 32% of hospital deaths in children under five. Reported cases of malaria have almost tripled during the last decade. Reported hospital admissions for malaria and anemia rose from 17,589 in 1985 to 75,843 in 1990.

Malawi has one of Africa's highest mortality rates for children younger than five: 285/1,000. Repeated malaria illness contributes significantly to this rate both directly and indirectly. Women in Malawi bear on average 7.6 children, and estimates of maternal mortality range from 113 to 474 per 100,000. Malaria is undoubtedly a major contributor to this mortality. These two groups — under fives and pregnant women — are particular targets in any malaria control strategy in Malawi.

Malaria-related morbidity in adults also has a significant impact on the productivity of Malawi's large agricultural sector, the foundation of the national economy. Repeated malaria attacks diminish a farmer's capacity to produce for the family and for sale in the market.

Rationale for the Survey

The five-year plan for 1990-1994 of the National Malaria Control Programme (NMCP) calls for:

- improving the understanding of malaria illness, prevention and treatment nationwide;
- developing alternative methods of control; and
- improving malaria education messages given by the health system and schools.

To meet these objectives, the NMCP must first explore current practices and perceptions regarding malaria to ensure that the methods and messages devised are appropriate, acceptable and properly targeted.

To provide policy makers and managers with the necessary background information for devising new programs and to establish epidemiological and behavioral baselines against which program accomplishments could be measured, a nationwide, population-based survey of current knowledge, attitudes and practices (KAP) regarding malaria was carried out between March 16 and May 16, 1992. The survey was conducted by the Community Health Sciences Unit (CHSU) of the Ministry of Health, Lilongwe, with support from USAID/Lilongwe and technical assistance from the U.S. Centers for Disease Control and Prevention (CDC) and the VBC Project. Personnel involved in the planning, execution and analysis of the KAP survey are listed in Appendix A.

General Objectives

The objectives of the KAP survey of malaria-related health practices were to provide the NMCP with the following:

1. Information to be used in developing health education messages about malaria, particularly aimed at managing febrile illness in young children and preventing malaria in pregnancy.

2. Programmatic indicators for monitoring NMCP progress toward stated goals, particularly the reduction of human-mosquito contact and the resulting malaria morbidity in communities.

3. Information about constraints on use of and access to treatment and prevention.

4. Information about household expenditure on treatment and prevention of malaria.

Findings of the KAP survey addressing each of these objectives are presented in sections 11 and 12. Appendix B contains a more detailed outline of objectives. The survey methods are described in Section 3, and Appendix E contains the questionnaire.

3. Survey Methods

Sampling

The survey covered the entire country. It was carried out during April-May 1992 at the end of the rainy season peak of malaria transmission. Although less rain than normal fell during the 1992 rainy season, veteran health personnel reported that at least as many cases of malaria were being seen as in recent years.

Using data from the 1987 census of Traditional Authority (TA) areas, the survey team chose 30 TAs at random following standard cluster selection practice. Within each of these TAs, divided into Enumeration Areas (EA)[2] of approximately 1,000 population each, a starting EA and starting village or location was randomly selected. Beginning from this starting point, a cluster of 51 households were surveyed in each of the 30 TAs initially chosen, producing a total of 1,531 households. (An extra household was surveyed by error in cluster 30.) Selected districts, TAs, EAs, and villages are listed in Appendix C.

The details of the sampling method within each village are given in Appendix D.

Considerable effort was expended attempting to complete an interview for each chosen household. The team spent three days in each cluster. If it was impossible to conduct an interview because of the absence of all family members during that period (a common occurrence in a society in which attendance at distant and frequent funerals is most correct), another household was chosen as a substitute, following the established protocol. To minimize the nonresponse rate, villages were notified in advance of the team's arrival. In the two urban clusters, interviews were conducted during early morning and evening hours when householders were most likely to be home.

[2]An Enumeration Area is a Malawian census grouping averaging 1,000 persons.

A household was defined as a group of people who sleep under the same roof, work the same plot of land and eat from the same pot. Specific circumstances, such as older male children who sleep in a separate small hut or with grandparents in an adjacent house, or several wage-earners living together in an urban household with no garden, were decided by determining whether the household was for the most part a separate economic unit. In the case of polygamous families, the male head of household was counted in the household of only one of his wives — usually the first wife — with whom he worked a plot. Such details are described in Appendix D.

Interviewers

Young female school leavers with at least 12 years of schooling were selected as interviewers. An attempt was made, with only partial success, to select interviewers fluent in Tumbuka or Yao, minority languages necessary for conducting the survey in some areas. All interviewers were fluent Chichewa speakers, the formal language of the survey. Women were selected because it was thought that they would be better able to question female subjects about pregnancy and the illness of young children.

Twenty-four women were trained for 20 positions as interviewers to accommodate expected dropouts and possible absences during the five weeks of field work.

Training was conducted over seven days. Two days were spent in the classroom in didactic sessions led by Ministry of Health staff and the consultants. Sessions covered the background of the survey, interpersonal skills required during an interview, and a detailed explanation of the purpose and meaning of each part of the survey instrument, a six-part questionnaire in English. The third day was spent in group work translating the questionnaire into Chichewa and practicing role-play interviews in that language. Particular attention was paid to the vocabulary describing malaria fever and symptoms. Two days were spent in field training on the methodology of household selection, approach to village officials and actual interviews. Two final days were spent revising the questionnaire based on the field test and on printing and assembling the questionnaire forms.

Unforeseen problems with government clearance of the research project caused a three-week delay. Because of this hiatus, one day of refresher training was held just before field work on the survey began. During this brief refresher, we reiterated the purpose of the survey and reviewed in Chichewa each question to be asked.

At the end of training, the four best trainees were selected as team leaders and each was assigned a team of four interviewers. One team of Tumbuka speakers covered the northern region of the country, where that language is spoken. The team leaders were given a half day of special training on the use of maps, selection of households, reinterview and form checking, and organizational issues.

Survey Instrument

The survey instrument, a structured interview questionnaire, has six parts. Part I includes questions about age, sex, marital status, education, occupation, and the occurrence of malaria fever in the preceding 14 days for each household member. This information was determined by interviewing either the male or female head of the household.

Three household members were identified for further interview: one adult (10 years or older) reporting fever, one child (younger than 10) reporting fever, and the woman with the most recent completed pregnancy. In the case of two or more adults or children reporting fever, one was selected by coin toss.

Parts II and III of the questionnaire deal with episodes of malaria illness: one in an adult, for which that individual was interviewed, and one in a child, for which the child's mother or primary caretaker was interviewed. Information was collected on duration and severity of the illness; associated symptoms; type, sequence, location and cost of treatment behavior; and, in cases of child illness, the type, timing and dose of antimalarial drug given and the time spent caring for sick children.

In Part IV the most recently pregnant woman was questioned about her attitudes and knowledge concerning malaria in pregnancy; any antenatal care she received during the recent pregnancy, including the type and location of the facility; location and outcome of delivery; and any malaria medication she received during the pregnancy.

Part V of the questionnaire returns to the head of the household to determine the use of preventive measures such as bed nets, chemoprophylaxis, coils and traditional means, and expenditure on these measures during the preceding month. In addition, this part includes questions on the efficacy of preventive methods, the cause of malaria, and awareness of health messages about malaria.

In Part VI the head of household was questioned about household income from agricultural production, salaries and wages, market sales, remittances, sale of livestock, and rents. In this part physical characteristics of houses and ownership of radios, bicycles and oxcarts were also recorded.

Each interviewer conducted four to seven 20- to 60-minute interviews a day. Team leaders did three interviews in each cluster to maintain their familiarity with the questionnaire and the problems their teams might encounter. Team leaders also observed interviews, checked completed questionnaires, calculated distances and doses, selected and marked houses, and acted as liaison between the team and the community.

The District Health Officer (DHO) in each district assigned a local health worker to the survey team, preferably a person who knew the village and was familiar with community work. This involvement of local personnel was vital to the success of the survey, particularly in introducing the team and helping resolve problems and misunderstandings as they arose.

The full questionnaire, as administered in the field, is given in Appendix E.

Schedule of KAP Survey and Supervision

The survey was carried out between April 11 and May 16, 1992. Four days were allowed in each cluster for contacting the DHO, being introduced to village leaders, completing 51 household interviews, and traveling to the next cluster site. The teams worked six days and had Sundays free.

Supervision by two consultants and MOH staff, including one person from the Health Education office and three from CHSU, was scheduled for each cluster. Supervisors were responsible for assisting in liaison with the DHO, ensuring proper household selection, and checking all questionnaire forms before departure from a cluster village.

Data Entry and Analysis

Data entry was contracted out to a local firm in Lilongwe and accomplished using DBase III+. Second entry for error checking was done by staff of the Mangochi Malaria Research Project. The data were analyzed by the consultants and CHSU staff using EpiInfo software.

KAP Survey Budget

Per diem and allowances during training	10,647.00
Per diem and allowances during survey	44,022.00
Salaries (surveyors)	6,086.15
Transport (fuel) 6 vehicles	8,000.00
Stationery	4,500.00
Data entry and programs	4,990.00
Total	78,245.15
10% Contingency	7,824.51
Grand Total	86,069.66

4. Study Population

Malawi is divided into three administrative regions — North, Central and South — that differ in social, economic and geographical characteristics. Approximately 11% of the population live in the North, 39% in the Central and 50% in the South. This population distribution is reflected in the surveyed clusters: three in the North, 12 in the Central region and 15 in the South.

There were two urban clusters in the sample: one in the city of Lilongwe (Central) and one in central Blantyre (South). One cluster was in Kasungu town (Central). The rest were more rural to varying degrees.

The survey covered 1,531 households and 7,025 individuals. The average household size in the sample was 4.6 people.

Table 1 shows the distribution of the sample population by sex and age group, which closely corresponds with United Nations estimates for Malawi in 1990 (UN 1991).

For the purposes of the KAP survey an adult was defined as a person 10 years of age or older. This definition produces a dependency ratio of children to adults of 0.54.

House construction materials were recorded for each household as an indicator of socio-economic status. The most common houses (44%) are made of mud or mud and poles. Another 35% are constructed of sun-dried brick, either painted or unpainted. Fifteen percent are built of baked brick, and 6% of poles and grass. Most houses (78%) are roofed with thatched grass; the rest either with tiles (2%) or corrugated metal (20%). Forty-eight percent of the houses have no windows. One-third have open windows or windows covered with grass, thatch or poles, and the remaining 19% have windows covered with wire mesh or glass.

Male-headed households predominate in the sample (80%). Other surveys in Malawi have reported as many as 40% of households headed by females (GOM and UNICEF, 1987). The difference may reflect different definitions of a household. The UNICEF figures also differentiate between *de jure*

female-headed households (30%) and *de facto* female-headed households (10%). The KAP survey probably would not have captured the *de facto* female-headed households if a women reported a husband as household head even though he had left the family.

The average age of a male household head (HH) was 42.6 years and that of a female HH 50.0 years. Of the 76 single-member households (4%) in the sample, 21 were male and 55 female. Half of the women who lived alone were over 60 years old, compared to 14% of the men who lived alone.

Table 1
Sample Population Distribution by Age and Sex

Age	Male	Female	Sex Unreported	Total
0-11 mo.	117 (3.5%)	122 (3.4%)	4	243 (3.5%)
1-4 yr.	411 (12.3%)	433 (12.0%)	19	863 (12.3%)
5-9 yr.	565 (16.9%)	576 (16.0%)	14	1,155 (16.4%)
10-19 yr.	799 (23.9%)	898 (25.0%)	24	1,721 (24.5%)
20-29 yr.	463 (13.8%)	591 (16.4%)	5	1,059 (15.1%)
30-39 yr.	347 (10.4%)	356 (9.9%)	6	709 (10.1%)
40-49 yr.	249 (7.4%)	259 (7.2%)	5	513 (7.3%)
50+ yr.	390 (11.7%)	361 (10.0%)	5	756 (10.8%)
No record	5	0	1	6
Total	3,346 (100%)	3,596 (100%)	83	7,025 (100%)

More than 67% of household heads reported their primary occupation as farmer. Another 4% were agricultural laborers, 2% non-agricultural laborers, 7% semi-skilled workers, 4% skilled workers, 5% engaged in small business enterprises, 5% in business or professions, and 2% were fishermen. The rest were elderly or engaged in a variety of occupations such as village health worker, servant or student.

Twenty-three percent of male HHs and 58% of female HHs reported no formal education. Table 2 shows education level of household heads by gender.

Table 2
Education Level of Household Heads by Gender

Years of Education	Male HH	Female HH
0	22.9%	58.5%
1-8	66.6%	38.9%
9-12	7.5%	1.3%
>12	3.0%	1.3%

1,221 males, 298 females, 12 unreported

The level of education reported among all people older than 14 years in the sample population is shown in Table 3.

Table 3
Education Level of All Over 14 Years by Gender

Education	Male	Female
0 years	21.8%	44.9%
1-8 years	68.0%	51.2%
9-12 years	7.8%	3.0%
>12 years	2.4%	0.9%

1,789 males, 1,946 females, 32 unreported

Almost all households in the sample population are involved in farming: 92% reported having land for crop production, the great majority in customary holdings. The average available land per household with farmland is 2.4 acres. Sixty-five percent of these households have less than two acres.

Household income comes from a number of sources. Eighty-eight percent of households reported farm production for the 1990-1991 growing season. Household heads reported the amount of each crop produced by volume in local units of measurement. This product was valued using standard weight equivalences for the local units (baskets, oxcarts, plates and so forth) and published ADMARC prices for each commodity. Valued this way, farm production averaged MK 420 per household. Sixty-two percent of the households had production below MK 300. More than half of the households reporting farm production reported no cash sales of commodities. The sales among all producers averaged MK 183 for the year.

Twenty-eight percent of households reported income from salaries, wages or formal business. These households derive an average annual income of MK 3193 from these sources. Fifty-five percent of households reporting this type of income receive less than MK 1000 per year.

Nineteen percent of households reported income from sales of items manufactured in the household, such as beer, mats, pots and furniture, or commodities gathered in the countryside, such as mangoes and firewood. Average annual income from such sales is MK 687 for those households. Sale of livestock, milk or eggs was reported by 12% of households, with an average annual income from such sales of MK 216.

Remittances are another source of household income for 6% of households, averaging MK 769. Rental income was reported by 1% of households at an average of MK 513 per year.

Total household income is the sum of income from all sources. The average income per household in the sample is MK 1470. The contribution from each source is shown in Table 4. These shares are not the income to any one family or type of household, but the sum across all sampled households divided by the 1,531 households in the sample.

Table 4
Components of Average Annual Household Income

Income Source	Income (MK)	Percent of Income
Salary/wage/business	892	60.6
Farm production	371	25.3
Market sales	131	8.9
Remittances	44	3.0
Livestock sales	25	1.7
Rents	7	0.5
Total	MK 1470	100.0

This average household income generates a per capita annual income (household income/family size) of MK 368.

It is interesting to examine the distribution of annual household incomes. The quintiles of household income are displayed in Table 5.

Table 5
Distribution of Annual Household Income by Quintiles

Income	% of Households, Cumulative
MK 0-136	20
MK 137-328	40
MK 329-644	60
MK 645-1379	80
MK 1380-61980	100

For the analytic purposes of the KAP, household incomes were labeled "very low" (MK 0-500), "low" (MK 501-1000), "moderate" (MK 1001-3000) or "high" (>MK 3000).

Income levels in male-headed and female-headed households are shown in Table 6.

Table 6
Household Income Level by Gender of Household Head

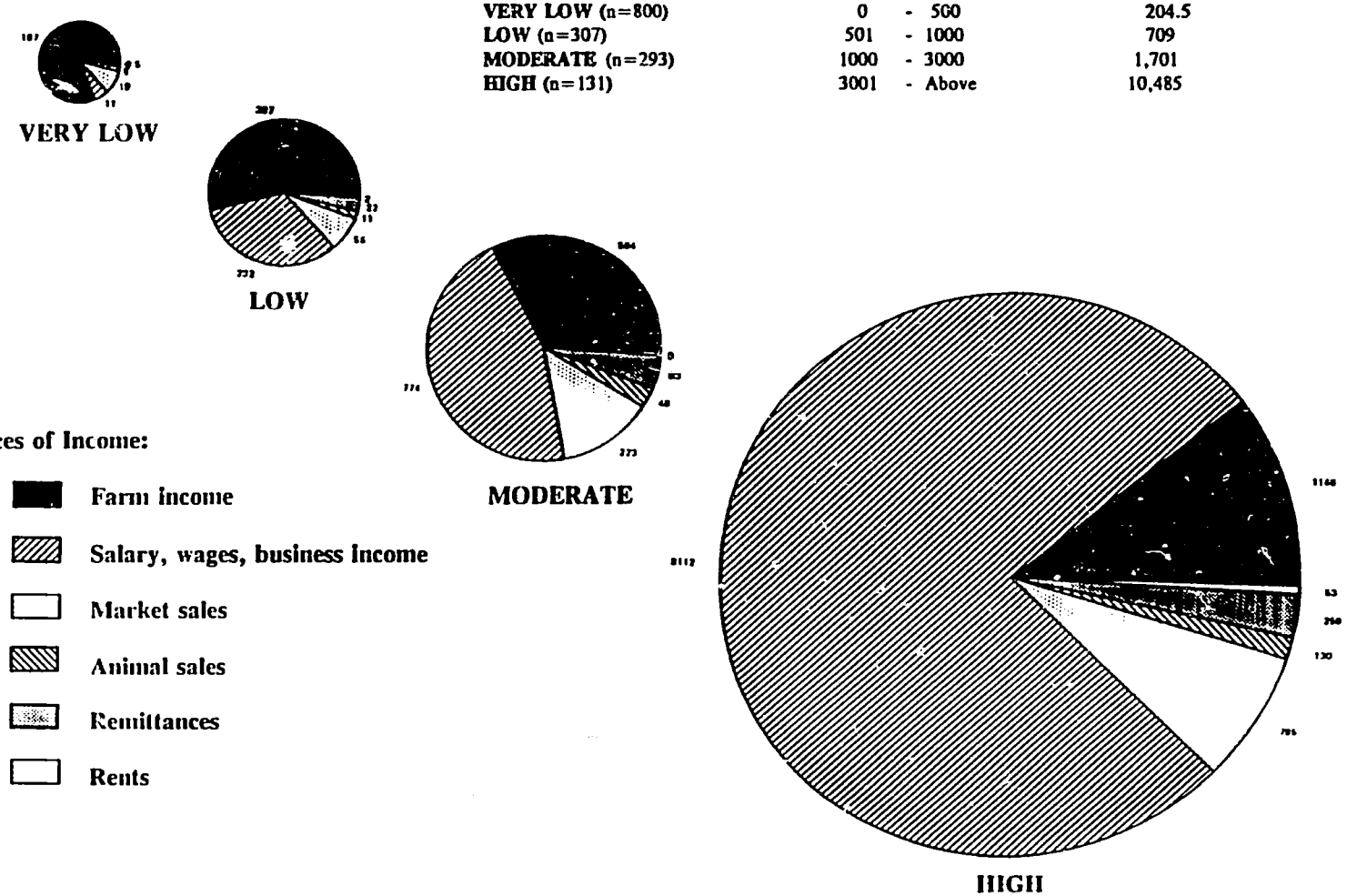
	Male	Female
Very Low	45.8%	78.5%
Low	22.5%	10.1%
Moderate	22.0%	7.7%
High	9.7%	3.7%
Total	100%	100%

1,224 Males, 298 Females, 9 unrecorded

Some variation in household characteristics is found between regions. Figure 1 shows the number, average size, average annual household income and average plot size by region.

Figure 1. Sources of Household Income by Income Level Group, Malawi, 1992
(Size of pie charts is proportional to average income of each group.)

INCOME LEVEL	Income Range (MK)	Average (MK)
VERY LOW (n=800)	0 - 500	204.5
LOW (n=307)	501 - 1000	709
MODERATE (n=293)	1000 - 3000	1,701
HIGH (n=131)	3001 - Above	10,485



5. Malaria Epidemiology

In Part I of the survey questionnaire, each household member's name and whether that individual had experienced malaria-like fever during the previous 14 days were recorded. Reported illness episodes by age are shown in Table 7. During childbearing years, represented in the table by ages 11-50, women reported fever more often than men. This may reflect more severe attacks during pregnancy or simply the fact that female respondents might not be aware of all malaria attacks in men working away from home.

Table 7
Reported Malaria Fever in Preceding 14 Days by Age

Age	N	Fever	No Fever	No Report	% Fever
0-11 mo.	249	110	134	5	44.2%
1-4 yr.	863	421	439	3	48.8%
5-9 yr.	1,155	347	799	9	30.0%
10-19 yr.	1,721	367	1,332	22	21.3%
20-29 yr.	1,059	328	721	10	31.0%
30-39 yr.	709	246	458	5	34.7%
40-49 yr.	513	187	314	12	36.5%
50+	756	312	439	5	41.3%
Total	7,025	2,318	4,636	71	33.0%

1 unreported

Rates of reported malaria fever were significantly higher for females than that for males among adults aged 20-49, as shown in Table 8.

Table 8
Reported Malaria Fever in Preceding 14 Days by Gender

	Male		Female		
Age	Fever	No Fever	Fever	No Fever	p.
20-29 yr.	110	345	218	317	p<001
30-39 yr.	107	237	137	217	p<.05
40-49 yr.	68	171	118	139	p<.001

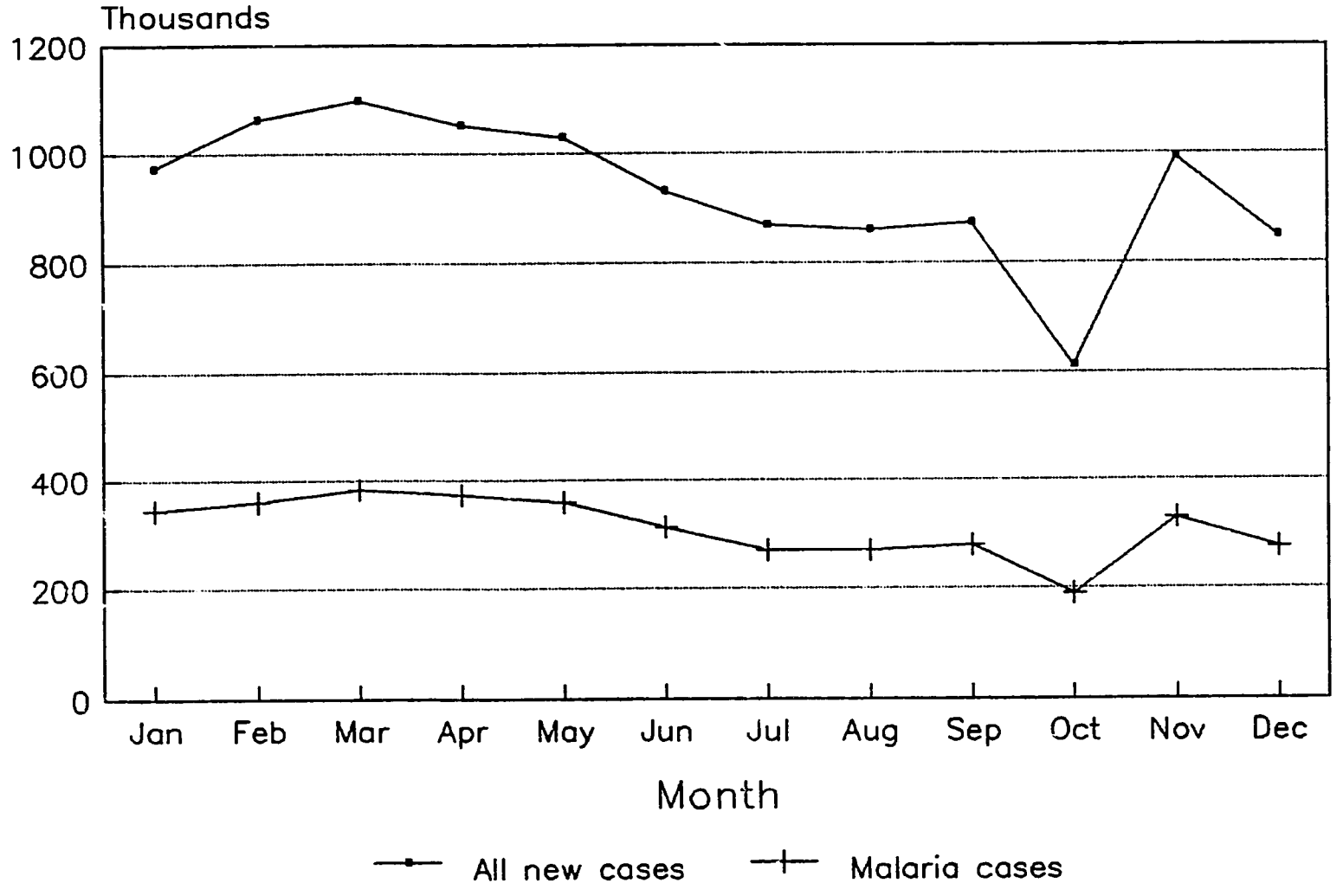
Other recent surveys of malaria in Malawi have shown similar or even higher rates of reported fever. A survey conducted by Project Hope in December 1990 among mothers of children under two years of age on tea estates in Thyolo District found that 190 of 298 mothers reported fever in their children within the previous month, a rate of 64% (Project Hope, 1991). A KAP survey in March 1992 of malaria-related practices among 772 residents of the Salima Lakeshore Agricultural Development Division (SLADD) Headquarters in Senga Bay found that 165 (21%) reported malaria within the preceding two weeks (Blogg, 1992).

Information from the National Health Information System (HIS) indicates that in 1989 almost 10% of the 3,744,876 total outpatient cases of malaria reported for the year occurred from mid-April to mid-May. Figure 2 presents the monthly pattern for 1989. Thirty-six percent of children under 10 in our sample population were reported to have experienced a fever episode during the previous 14 days. Seasonally adjusting and annualizing this rate produces an average estimate of 7.6 episodes per child per year. The rate for adults was 6.2.

The number of episodes per child per year is considered by health officials familiar with Malawi to be a reasonable estimate. The rate for adults, however, is probably an overestimate. Experience and adult reporting in other circumstances suggest that a rate of two to three episodes per year is more likely correct. General malaise and flu-like

Out-patient Malaria Cases by Month

MOH 1989 Tables



symptoms are commonly ascribed to malaria in adults. Therefore, for the purposes of the economic analysis, an adult rate of 3.1 episodes per adult per year (one-half the estimated rate) was used.

A total of 1,[illegible]8 adults were interviewed with Part II of the questionnaire; 724 caretakers, usually the mother of each child, were interviewed with Part III. This sample consisted of people identified in the household census as having experienced malaria fever within the preceding 14 days[3] and able to recall the day the fever began. If the fever had begun more than two weeks before, the individual was excluded from analysis unless the fever persisted to the day of the interview. This selection of cases within a two-week period produced the total of 799 adult interviews and 565 caretaker interviews used in the analysis.

Parts II and III determined the number of days during the illness episode when the respondent (either the ill adult or the adult caretaker of an ill child) was unable to work (full loss of work or study time) or able to work but at a reduced rate (partial loss of work or study time). Fifty-four percent of adults and 37% of caretakers reported that malaria had had an effect on their work or studies. Affected adults reported on average 3.6 days of partial and 3.8 days of full-time loss; caretakers an average of 2.5 and 3.5 days, respectively. If partial time loss is valued at 50% and full loss at 100%, averaging over all cases, an average of 1.2 days of caretaker time is lost per child episode of fever and 2.2 days lost per adult episode.

The preceding paragraph is typical of one type of analysis carried out on the survey data that will reappear throughout this document. Therefore, it is useful to outline the method carefully. For many of the variables in the survey, a large proportion of respondents gave no positive response: the question was not relevant and no response was solicited, the answer was unknown or the answer was negative. In the case of illness days, only a subset of respondents answered that malaria had interfered with work or studies (54 and 37 percent). Among those who

[3]Expecting much less malaria in adults than in children, researchers used malaria fever within the past three months to select adults to interview in more depth. When adults were found to report nearly as many cases as children, the same 14-day recall period as for children was used in the analysis.

answered that there was an effect, the average duration was 3.6, 3.8, 2.5 or 3.5 days, depending on the question. This portion of the respondent population is referred to as "affected" or "using" or "buying," depending on the question, and the average value for the affected portion of the respondent population is given to characterize the experience of only those affected.

However, for the purposes of whole-population analysis, it is also desirable to estimate the average value for the entire respondent population. This average is referred to as the average "for all cases," "per episode" or "per household," and the denominator is the whole population.

Respondents to Parts II and III also reported symptoms other than fever associated with the illness episode. Table 9 shows the frequency with which specific symptoms were reported in child and adult cases.

Caretakers responded that the illness was "severe" in 43% of child cases. The most common reasons for this estimation was the perception that the child would not eat or was very hot.

The average duration of fever reported was 6.6 days for adult cases and 5.3 days for child cases. In both groups half of the cases lasted less than four days.

Table 9
Specific Malaria Symptoms Reported, Percents

	Child Cases	Adult Cases
Shivering/shaking	56	60
Diarrhea	23	11
Vomiting	32	11
Cough/rapid breathing	32	22
Convulsions	5	2
Skin Rash	6	*
Headache	*	64
General Body Pain	*	*

* Not solicited

The reported rate of malaria fever varied by region. Table 10 shows the proportion reporting fever in each region. An examination of the 71 persons for whom no response was recorded revealed no regional, age or gender bias in the missing values.

The South and Central regions usually report more malaria than the North, so this regional finding is surprising. One factor that might help explain the lower rate reported from the South is the extreme drought experienced in that region in 1992. There also might have been regional variations in respondents' understanding of the vocabulary used to elicit malaria incidence. Different teams worked in different regions, and variation in team practice may account for the variation in response. Finally, the particular location of clusters within the region might explain the regional variation.

Table 10
Regional Variation in Reported Malaria Fever During the Preceeding 14 days

Region	Fever	No Fever	Missing	Total	% Fever
Central	1031	1719	46	2796	37
North	375	423	3	801	47
South	912	2494	22	3428	27
Total	2318	4636	71	7025	33

Table 11 shows malaria by district sampled. The figures in this table show considerable unexplained variation within regions. Perception of malaria, transmission in the drought year, and characteristics of the cluster site and population may have contributed to the variation in reporting of malaria fever during the preceding 14 days.

Table 11
Malaria Fever Reported During the Preceding 14 Days by District

	Fever Yes	Fever No	Unknown	Total	% Fever
North					
Karonga	93	140	0	233	39.9
Rumphi	136	156	2	294	46.3
Mzimba	146	127	1	274	53.3
Central					
Kasungu	188	258	1	447	42.1
Ntchisi	139	108	1	248	56.0
Mchinji	82	143	3	228	36.0
Lilongwe	329	579	23	931	35.3
Dowa	139	97	9	245	56.7
Dedza	110	332	7	449	24.5
Ntcheu	44	202	2	248	17.7
South					
Machinga	128	322	3	453	28.3
Mangochi	95	346	1	442	21.5
Mwanza	54	182	0	236	22.9
Zomba	61	158	0	219	27.9
Chiradzulu	71	137	5	213	33.3
Blantyre	99	409	11	519	19.1
Chikwawa	79	166	0	245	32.2
Thyolo	148	251	0	399	37.1
Nsanje	71	192	0	263	27.0
Mulanje	106	331	2	439	24.1
Total	**2318**	**4636**	**71**	**7025**	**33.0**

6. Treatment of Malaria Fever

Parts II and III of the questionnaire also addressed treatment-seeking behavior associated with an illness episode. Behaviors that could be reported on the questionnaire included: attendance at a clinic, hospital or practitioner's office; treatment by a traditional healer; treatment by a village health worker or health surveillance assistant (HSA), two community-level health providers who dispense antimalarial drugs; changes in diet; increased fluid intake; treatment with antimalarial drugs; treatment with antipyretic drugs; treatment with herbs; and taking no action. Typically, several of the treatment options available to people with fever were reported. Table 12 shows both unprompted and prompted proportions reporting each type of treatment behavior.

Table 12
Types of Malaria Fever Treatment in Children and Adults

Treatment	Child	Adult
Increased fluids	72%	68%
Antipyretics	69%	68%
Antimalarials	56%	56%
Clinic/hospital/office	52%	44%
Change in diet	40%	39%
Herbs	10%	10%
Traditional healer	7%	8%
VHW/HSA	4%	3%
(None)	3%	5%

There was close correspondence between treatment of fever in children and adults. Children were taken to a clinic or hospital somewhat more frequently when fever was present. The very low reporting of treatment by traditional healers is certainly an artifact of the interview process and does not reflect true behavior. Experience of the researchers

and conversations with health care providers throughout the country suggest that a substantial proportion of fever cases are treated by traditional healers either before or after attendance at modern medical facilities. Respondents may have been reluctant to reveal such practice to a survey team introduced to them by representatives of a medical system often assumed to be antipathetic to traditional medicine. Structured interviews such as those used in the KAP survey probably will not capture this treatment mode.

Significantly more of the children perceived to have "severe" illness were taken to a clinic (59% of 245) than children not perceived to have "severe" illness (47% of 320). The caretaker was asked to say what symptoms had led her to believe the illness was severe. In 61% of cases the caretaker replied that the child wouldn't eat and 55% said the child felt very hot. Other symptoms suggesting severe illness were shaking (33%), diarrhea (13%), convulsions (13%) and prolonged fever (12%).

Twenty-four percent of the children with "severe" illness who were taken to a clinic were taken on the first day of fever, and an additional 48% were taken on the second day. Among all child cases, 78% were taken to a clinic by the second day of fever. The maximum delay in treatment at a clinic was seven days from fever onset. Among adult cases, 82% attended a clinic on the first and second days of fever.

Health facilities in Malawi are of three types: those provided by the Ministry of Health or by local government, which charge no fees (or very low fees in the case of some local government facilities); facilities of the Christian Hospital Association of Malawi (CHAM), which charge fees for most services; and private facilities, including clinics operated by employers. Table 13 shows attendance of adult and child cases by type of facility. Many CHAM facilities provide under-five clinics free of charge or set a ceiling on treatment charges for children. Reduced costs for children may explain the greater proportion of child cases attending non-government facilities.

Table 13
Health Facilities Chosen by Attenders

	Adult	Child
Government	75%	66%
CHAM	19%	33%[4]
Private	6%	

5 unreported

The clinic attended was an average of 6.2 kilometers from home for adult cases and 5.6 kilometers for child cases.

Respondents were questioned about the type of medication given by the facility. Table 14 shows medication given by type of facility. The only noticeable difference is the greater likelihood of antibiotics being given to adult patients in nongovernmental facilities. It should be noted that this analysis is based on respondents' recall of the type of drug.

[4]Child cases in CHAM and private facilities had to be combined because of coding errors.

Table 14
Patients Receiving Three Types of Medication, by Type of Health Facility

	% Receiving		
Facility	**Government**	**CHAM[5]**	**Private**
Adult Cases (n=350)			
Antimalarial	80	82	68
Antipyretic	63	70	50
Antibiotic	7	15	18
Child Cases (n=291)			
Antimalarial	75	71	
Antipyretic	61	65	
Antibiotic	8	8	

Thirty-five adults (10%) and 19 children (6%) were admitted to hospital. Adults reported an average length of stay in hospital of 7.7 days, while children stayed an average of 5.2 days.

The other most common form of malaria treatment in the sample population was self-medication. Among adult cases, 423 (53%) reported taking drugs not given by a clinic; 299 children (53%) were given such drugs. Most drugs were purchased from small shops near the village; another large portion are drugs or herbs at hand in the household, either remnants of prior purchases or facility prescriptions. Table 15 shows the source of medications obtained outside of health facilities. Multiple sources are possible.

[5]Child cases in CHAM and private facilities had to be combined because of coding errors.

Table 15
Sources of Medication Other Than Health Facilities

	Children n = 299	Adults n = 423
Grocery/shop	77%	83%
Home	19%	11%
Street Vendor	2%	0.0%
Employer	0.3%	0.5%
Other*	2%	5%

* These include teachers, police and friends.

The source of drugs was an average of 2 kilometers from home in adult cases and 1.9 kilometers in child cases.

Clinic attendance appears to be mildly but consistently correlated with household income, particularly among child cases. Table 16 shows this relationship. The type of facility chosen does not appear to be related to household income or the educational level of the HH.

Table 16
Health Facility Use by Household Income Level

Income Level	Child		Adult	
Very Low	48%	117/244	42%	172/413
Low	53%	68/129	41%	67/162
Moderate	56%	75/135	50%	81/163
High	61%	35/57	49%	30/61

The 99 cases who reported treatment by a traditional healer traveled an average distance of 2.5 kilometers for the treatment. In this sample, healers were midway between the closest source of treatment — the local village grocery or home itself — and the somewhat more distant health facility.

Adult respondents to Part II of the questionnaire were asked to state what they considered the best treatment for malaria. Of the 799 adult cases, 47% replied chloroquine plus antipyretic, 25% mentioned chloroquine alone, 16% antipyretic alone, 3% either Fansidar or amodiaquine, and 9% had no opinion or preferred some other medication.

Caretakers of child cases were asked to report on the dose and timing of any antimalarial given. Sixty-three percent of the 565 child cases are reported to have received antimalarial drugs, 87% of these within 48 hours of onset of fever. Table 17 shows the proportion of children receiving the recommended dose of chloroquine, based on caretakers' recollections.

Table 17
Correctness of Chloroquine Dose Given to Child Fever Cases

All Children Given Chloroquine, by Age, from all Sources

Age (Dose)	Number of Cases Treated	Too little	Appropriate	Too much
0-11 mo. (1.5 tablets)	52	21%	29%	50%
1-3 yr. (3 tablets)	171	47%	23%	30%
4-6 yr. (4 tablets)	80	51%	9%	40%
7-9 yr. (6 tablets)	53	62%	11%	26%

Table 18a
Proportion of Children Receiving Chloroquine at Health Facilities by Age

Age	Proportion
0-11 mo.	69%
1-3 yr.	71%
4-6 yr.	59%
7-9 yr.	49%

Table 18b
Correctness of Chloroquine Dosage Provided to Children of Different Age Groups (Health facilities only)

Age	Too Little	Appropriate	Too Much
0-11 mo.	14%	29%	57%
1-3 yr.	44%	27%	37%
4-6 yr.	36%	6%	58%
7-9 yr.	54%	8%	38%

Among children who received chloroquine, the proportion who got it from a clinic diminishes with age as does the proportion getting an appropriate dose, regardless of the source of the drug. Older children are less likely to be taken to a clinic and less likely to receive the appropriate dose of chloroquine.

Only five children were reported to have received Fansidar from a clinic. These include two one-year-olds who were reportedly dosed with 1/2 and three tablets respectively; two two-year-olds reported to receive three and four tablets; and one four-year-old given a dose of two tablets of Fansidar. It is likely that the mothers reported doses of other drugs in addition to Fansidar, or that the mothers incorrectly identified the drug the child received at the clinic.

The large number of children receiving more medication than appropriate may seem contradictory in a setting of severely constrained health resources such as Malawi. Shortages of drugs are not uncommon at health facilities. The data reported here are based on the mother's recall of dosing up to 14 days earlier. Also, although the interviewers attempted to record only the dose of antimalarial drug given, these findings undoubtedly include some reporting of dosing with other medications. In addition, the large proportion of children receiving medication acquired by the family outside of the health system means that overdosing is quite possible. The most common antimalarial drug in the market is Norolon, a commercial brand of chloroquine phosphate. Norolon is sold everywhere in two-tablet doses, encouraging dosing in two-tablet lots. Indeed, this is reflected in the reported dosing patterns of children, with the frequency bunching at two, four, six and eight tablets.

Caretakers who took their children to clinics reported being told that the child had malaria in 68% of cases; 24% reported that they were not told any diagnosis at all. Ten percent of children attending government clinics and 43% at CHAM or private clinics were reported to have received an injection.

The sex of the child does not appear to be significant either for the decision to attend a facility or for the choice of facility attended.

It is interesting that the average income of the households with a child respondent in Part III was somewhat higher than that for households with an adult respondent. The population of Part III households has an average yearly income of MK 1850 (median MK 646). The Part II population average of MK 1488 (median MK 473) is very similar to the entire sample average of MK 1470.

7. Malaria in Pregnancy

Of the 1,531 households in the sample, 92% included a woman who had ever completed a pregnancy.[6] The mean age of the women interviewed about their knowledge of and attitudes to malaria in pregnancy was 37 years.

Malaria was considered a problem in pregnancy by 84% of respondents. When asked in an open-ended question what specific problems malaria caused in pregnancy, the women mentioned a number of effects on maternal and child health. The specific problems and percentage of women volunteering them are listed in Table 19.

Table 19
Women's Responses: Problems Malaria Causes in Pregnancy

Abortion	49%
Illness in mother	36%
Illness in baby	14%
Stillbirth	13%
Baby born small and weak	13%
Maternal anemia	3%

When asked whether malaria medicine was harmful to a pregnant woman or her unborn child, 35% replied yes. Medicine was asserted to be effective in treating a malaria attack in pregnancy by 87% of the women, but only 68% said medicine could prevent an attack of malaria in pregnancy.

[6]A completed pregnancy was defined as one ending in a live birth, stillbirth or abortion.

It is a commonly held belief in Malawi that bitter substances are harmful to a pregnant woman and can cause abortion. This belief was asserted by 77% of the women sampled. Chloroquine in the formulation used in Malawi is typically quite bitter. Women who believe that bitter substances are harmful report that it was a health worker (13%), family member (30%), traditional advisor (5%) or traditional birth attendant (3%) who told them so.

Only women who had completed their most recent pregnancy within the last five years were selected for further interview in Part IV. This group consisted of 852 women with an average age of 29 years. No difference was seen in the pattern of response to the attitudinal questions between women pregnant within the last five years and the older women (average age 49 years) who had not been pregnant recently. Perceptions about the effects of malaria during pregnancy appear to be similar regardless of age or history of pregnancy.

Among the women reporting pregnancy within the last five years, there were 753 livebirths (88%), 14 stillbirths (1.6%), 31 abortions (3.6%), and 54 (6%) with an unreported outcome, possibly reflecting current pregnancies. Those reporting abortion were not asked about attendance at an antenatal clinic. The following discussion concerns the 767 live and stillbirths.

Of 767 women, 715 (93%) reported attending an antenatal clinic at least once during their most recent pregnancy. In 65% of cases the clinic was a government facility, in 28% a CHAM facility, and in the other 5% either private or other. The 2% other facility was probably either government or CHAM outreach clinics. The respondents showed some confusion as to the ownership of outreach clinics located at a traditional birth attendent's (TBA's) surgery. Of the attenders, 96% reported receiving an antenatal card, but only a third of them could produce the card.

Interviewers recorded information from the ANC card when it was available; in some instances a tetanus immunization card was substituted. Of the 218 women with a card, 84% had received chloroquine prophylaxis and 92% a dose of tetanus toxoid during at least one of the average of four visits recorded on the card.

Data from the ANC card were compared to the recall of women attenders with a card. These women reported an average of five visits to the ANC; 80% reported receiving chloroquine and 85% at least one tetanus toxoid injection. There was a mild tendency to overestimate the number of visits (up to 10 recorded on the card and up to 11 recalled) and tetanus injections (6% recalled more than three injections). But altogether, the women exhibited remarkable recall of their recent ANC experience. Alternately, it is possible that some interviewers neglected to distinguish between data from the card and data recalled by the woman, recording the card data for both sets of questions.

Recall data from the entire sample of 715 reported attenders indicate an average of five visits (ranging to 28), 91% receiving tetanus toxoid, and 74% receiving chloroquine.

Chloroquine prophylaxis was reported received by 74% of attenders, with the recommended two tablets per week reported by 60% of the women who received medication. Another 30% reported a dose higher than recommended, and 6% a lower dose. Ninety-one percent of those reporting receipt of chloroquine said they had consumed all of the medicine as prescribed. The women who took an incomplete dose explained that they were keeping it for themselves or their families to use (9%) or that they didn't like to take it (54%). Many who said they didn't like to take it reported unpleasant side effects or that it was "too close to the delivery."

Among the 46 women not attending ANC, 17% gave distance as the reason for nonattendance, 30% cost, and another 30% the belief that ANC attendance wasn't necessary. Interestingly, these women were no more likely than ANC attenders to consult a traditional advisor (15%), but did use TBAs more frequently (24%) than attenders (16%).

Among attenders, 326 (46%) reported an episode of malaria during the pregnancy for which 288 took chloroquine. Sixteen of the 46 nonattenders (35%) reported episodes of malaria, and five of them took chloroquine. Eighty-seven percent of the attenders who experienced malaria got their medicine for treating it from the clinic as opposed to 40% of nonattenders. The average distance travelled by attenders to acquire chloroquine for a malaria attack was 5.5 kilometers with an average cost of transport of MK 0.23 and an average cost of medicine of MK 0.56. The median cost for both transport and medicine was zero.

One-quarter of attenders delivered at home with assistance from family members. Another 13% delivered with a TBA, 59% at a clinic or hospital, and the rest either en route or unknown. Among nonattenders, 72% delivered at home, 13% with a TBA and 7% at a hospital. None of the nonattenders reported clinic delivery. Of attenders delivering away from home, 68% walked to the facility and 60% were accompanied by a female relative. Seventy-two percent of attenders and all nonattenders who delivered in a hospital or clinic reported that they had waited for the onset of labor before going to the facility.

Most women have some contact with the health care delivery system during a pregnancy. This point of contact is an important opportunity for conveying health messages about malaria, chemoprophylaxis and the importance of delivering in a facility.

Of the 753 live births, 687 (91%) were still living at the time of the interview, 40 (5%) had died and the final 24 (3%) had an unreported status. Malaria was stated as the cause of death in six cases, convulsions in four, fever in three, measles in four and diarrhea in five. The cause of death was unknown in six cases.

It is very likely that the rates of stillbirth, abortion and child mortality were underreported. Women were not eager to discuss such sensitive issues with a stranger as part of a formal, structured interview.

8. Preventive Measures in the Household

In Part V of the questionnaire the head of the household was asked what caused malaria. Multiple answers were allowed. Mosquitoes were identified as the cause by 55%; 24% of respondents replied that they didn't know. Other responses included cold weather (19%), unclean food or water (16%), not bathing (5%), overwork (3%) and flies (2%). Although the questionnaire asked about the use and purchase of drugs for prophylaxis, the data are thought to be confounded by responses indicating any drug purchase for malaria. The responses are not meaningful and are not reported here.

Three percent of HHs report that a household member receives drugs to prevent malaria as part of a free distribution program such as programs for pregnant women or children with sickle-cell disease.

Burning leaves or herbs to repel mosquitoes was the most commonly reported preventive measure used during the preceding month (18%). Lighting smoky fires in the house was reported by 14% of HHs and burning or smearing animal dung by 7%.

Preventive measures available for purchase included coils, bed nets, skin repellent and insecticide sprays. Coils are "ever" used by 16% of households, although only 6% reported purchasing coils during the preceding month, with an average expenditure per using household of MK 3.14. A box of 10 coils cost approximately MK 4 in the market at the time of the survey.

Skin repellent was reported "ever" used by just under 1% of households — 0.2% in the preceding month — with an average expenditure of MK 7.70 per using household during the preceding month. Most respondents did not recognize this measure at all.

Insecticidal sprays were reported "ever" used in 11% of households — 4% during the preceding month — with an average expenditure of MK 10.65 per using household. A large can of the most available brand of spray cost approximately MK 9.90 at the time of the survey.

Bed nets are reportedly owned by 7% of households, although only 66% of the households that owned a net reported its use the night before the interview. The average cost of the net to those acquiring them during the preceding year was MK 37.26. The market price and availability of bed nets vary widely throughout Malawi. Nets smuggled from Tanzania, which are large enough for one or two people, were available in the Karonga market at MK 35. Elsewhere nets cost as much as MK 65, and specially made large family nets can cost over MK 100. These, however, are available only in larger city markets and stores. In many district towns no nets are available for purchase.

Use of preventive measures appears to be positively correlated with both income and education level of the HH. This is particularly true for measures that must be purchased in the market. Table 20 shows "ever" use of specific measures related to income level of the household.

Table 20
Use of Preventive Measures and Household Income Level

	Coils	Nets	Sprays	Herbs	Dung	Fire
Very Low n=798	7.8%	3.8%	4.5%	18.7%	9.2%	15.9%
Low n=304	12.8%	4.6%	6.6%	17.1%	5.6%	11.5%
Moderate n=292	26.4%	10.3%	22.3%	18.5%	5.1%	12.7%
High n=131	45.8%	19.1%	38.2%	12.2%	3.1%	5.3%

Missing n = 6

When a HH reported not using a particular preventive method, he/she was asked the reason. For coils, 57% of non-users cited expense as the reason, 15% said they didn't know about coils, 13% claimed coils were not necessary, 2% said use of coils was unpleasant, and 1% said they were not effective. Nets were not used in 76% of cases because of

expense and in 10% because they were not considered necessary. Eight percent of HHs claimed not to know about bed nets. Less than 1% of nonusers said nets were either unpleasant or ineffective.

The KAP survey at the SLADD headquarters in Senga Bay (Blogg, 1992) reported that 91% of household heads recognized the cause of malaria, 66% reported using coils and 35% said they used a bed net. This sample of 125 households had an average monthly wage of MK 169.31, or approximately MK 2000 per year, putting it somewhat above the average income level of the nationwide survey. In several cases the bed net used by the household had been provided by SLADD.

The head of household was also asked whether he/she could recall any educational messages about malaria during the last year. The question specifically excluded commercial advertisement of drugs. Only 35% of HHs recalled a message. Of these, 45% had heard the message on the radio, 48% at a health facility, 10% from a village health worker, 10% had seen a poster, and 4% had gotten the message via a mobile health education van. Thirty-three percent of households reported owning a radio.

9. Out-Of-Pocket Expenditure on Malaria Treatment and Prevention

The most common out-of-pocket expense for malaria treatment is for purchased drugs. The average expenditure on drugs per purchaser is MK 0.75 for adult illness and MK 0.80 for child illness.

At the time of the survey, the common price charged in small grocery stores for Norolon was MK 0.32-0.40 for two tablets. Generic chloroquine was cheaper at approximately MK 0.03-0.06 per tablet. A variety of antipyretic drugs were available, with aspirin the least expensive at less than MK 0.05 per tablet.

The cost of transportation to acquire drugs averaged MK 0.06 per adult treated and MK 0.07 per child. The overwhelming majority of purchasers walk to the source, incurring no financial costs at all for transportation.

Table 21 displays the out-of-pocket expenditure for several types of treatment.

Table 21
Out-of-pocket Expenditure per Episode by Type of Treatment

Factor	Child per user (MK)	Adult per user (MK)
Drug self-treatment		
Treatment	0.80	0.75
Transport	0.70	0.06
Facility Attendance		
Treatment	0.71	1.24
Consultation	0.07	0.08
Transport	0.18	0.37
Hospital admission		
Treatment	3.14	7.64
Food and other	8.04	10.04
Traditional healer		
Treatment	2.62	2.61
Consultation	0.72	1.73
Transport	0.61	0.13

Total Out-of-pocket Expenditure/Case Child = 1.61, Adult = 2.29

The numbers of fever episodes per year for children and adults calculated in Section 4 are 7.6 and 3.1 respectively. Each household has an average of 2.97 adults and 1.61 children. Applying the average expenditure per case calculated in Table 21 to an estimated 9.2 adult episodes and 12.2 child episodes per household per year yields a total average household expenditure on treatment of malaria episodes of MK 40.71 (MK 19.64 spent on child episodes and MK 21.07 on adult episodes).

Households also incur out-of-pocket expenses for purchase of preventive methods in the market. Table 22 shows expenditure for preventive measures per household purchasing annualized as a cost per year.

Table 22
Average Annual Household Expenditure on Malaria Prevention[7]

	Cost per Using Household (MK)
Insecticide spray	127.80
Repellent	92.40
Mosquito coils	37.68
Bed nets	37.26
Transport to health facility to obtain free drugs	3.27

Total Prevention Expenditure per Household per Year = MK 7.44

The annual out-of-pocket expenditure per household to treat malaria has been estimated at MK 40.71 and the annual expenditure on preventive measures at MK 7.44. Together these expenses amount to MK 48.15, or 3% of the average annual household income. It is interesting that almost five times as much is spent on treatment of fever episodes as on prevention. There may be some household resources that could be shifted from reactive treatment expense to preventive strategies if appropriate health education messages and inexpensive, effective preventive measures were available.

[7]Expenditures on drugs for prevention are not included because the survey question elicited responses that confounded drugs for prevention with those for treatment.

10. Indirect Costs of Malaria to Households

The major indirect cost of malaria revealed by the questionnaire is the time adults spend either ill with malaria or caring for ill children. The KAP survey was neither designed nor able to capture such indirect costs as premature mortality, diminished learning capacity in schoolchildren, complications in pregnancy due to malaria, or the fact that agricultural practices might be adjusted to accommodate the regularly occurring illness of the household members most vital to crop production.

Respondents in Parts II and III were simply asked to estimate the number of days during the fever episode that they were unable to work at all due to illness or childcare and the number of days that they could work but not as effectively as usual. These days were valued at one day and one-half day respectively. The average number of such days is presented in section 4 on malaria epidemiology. The total time lost was 1.2 days for a child case and 2.2 for an adult case of malaria fever. Applying these average time losses to the number of child and adult episodes in a household (12.2 and 9.2 respectively) yields an estimated adult time loss to malaria per year per household of 34.8 days.

The average annual income per adult (any person 10 years or older in this analysis) is MK 557, or MK 1.53 per day. Each adult episode incurs MK 3.37 of indirect cost, and each child episode MK 1.84. The adult time lost to malaria illness can be valued at MK 53 per household per year, or about 4% of average household income.

The total annual cost of malaria to households is the sum of the direct and indirect costs. These average MK 101 per year, which represents 7% of the average household income. Among households with very low incomes this represents a significant loss to malaria.

11. Lessons Learned and Problems Encountered

Several unforeseen problems arose during planning and preparation of the KAP study. First was the abrupt decision to start the survey after months of delay. As a result, the anthropologist scheduled to assist the survey could not participate. Second was a three-week delay in obtaining final clearance to begin the field survey, which created a gap between the end of training and the first interviews in villages. In addition to loss of team motivation and skills acquired during training, the delay jeopardized the supervisory schedule that had been planned. Additional supervisors were identified within CHSU, brief retraining was carried out in the field, and the problem was overcome satisfactorily.

The death of Dr. Michael Olivar, epidemiologist at CHSU and a key player in planning the KAP study, particularly the data entry and analysis, resulted in a considerable slowing of analysis of the survey data and the design of appropriate policy responses to study findings.

Several other problems could have been avoided. First are the problems created by the scale of the survey. In the future, a schedule that uses fewer interviewers over a longer time would not so severely tax the human, transportation and administrative resources of CHSU. A smaller team of the best and most highly motivated of the interviewers could work under looser supervision, require fewer vehicles, and relieve the strain on the administrative resources available to the NMCP, which led to some of the problems outlined below.

The understanding and cooperation of district health personnel are vital to the success of field surveys. Their knowledge of the local situation and acquaintance with community leaders can make it much easier for outsiders to work in communities. A representative from the District Health Office, preferably someone with community experience and ties, was present when the team first approached each cluster village. However, there were significant communication problems between CHSU and the districts, part of which stemmed from the delay in starting the survey. When the survey finally began, there was inadequate renotification of the districts. In future efforts, more care should be taken to notify local officers of the purpose, nature and timing of the activity.

Although speakers of Yao were sought as interviewers, only two were hired, neither of whom was truly proficient in the language. This deficiency affected two clusters. However, translators were found within each community to assist in interviews. The team in the north encountered one cluster where Angoni was spoken. This did not present a serious problem, as villagers spoke Tumbuku as well and adjustments could be made in the interviews. These potential difficulties need to be more squarely addressed in any future KAP survey, and a greater attempt made to find fluent speakers of all relevant languages.

Problems also arose while the survey was being conducted. The most significant problems occurred when villagers misunderstood the nature of the survey and the role of the interview team. In one cluster almost no one was found at home on the second day of interviews. A rumor had arisen that the team were "blood suckers" intent on harming the local people. Luckily, the local chief was able to convince people of the innocence of the survey. This incident reinforces the importance of liaison with village officials and introduction of the team to the community by recognized personnel familiar with the local situation.

In another cluster with significant numbers of Mozambican refugees integrated into the community, several households were reluctant to be included in the survey for fear their names would be recorded to repatriate them in the future. Again, the misunderstanding was clarified with patient effort by the team leader, but no doubt some residual effect of this problem is reflected in the data collected in that cluster.

A number of clusters in the South raised the problem of villagers' expectations that the survey was to identify households in need of drought relief in the form of food distribution. Although the team leaders explained that this was not the case, there may have been some underreporting of crop production during the prior growing season. The 1991-92 season was not a good one, particularly in the South, so this problem may be negligible.

Researchers at the Centre for Social Research in Zomba, who have a great deal of experience with survey research of this nature, have suggested that overestimation of both land available for farming and the total product of the land is common. If so, this tendency to overestimate might help counterbalance the tendency to understate income in order to procure food.

It was observed that female interviewers much preferred to talk with the senior female member of the household rather than the male head, particularly if they had to wait for the male head to return from work. Although the interviewers were strongly encouraged to speak to the true head of the household, this did not always occur.

The impact of this preference for conversation with the female partner can influence the findings in several ways. One has been alluded to above: the finding that women of childbearing age report more malaria than men of the same age. This may be an artifact of women's under-reporting of men's illness, particularly if the man is away working, which is very common in Malawian households. Another possible effect is underreporting of income from wages. A wife often is not aware of the amount of the wages a male head of the household earns. If the husband does not use them to support the family in any way, this under-reporting of actual wages may be an accurate report of the resources available to treat children's and women's illness, but it is a potential bias in the data on income.

On the other hand, the interviewer preference for conversation with female householders may be beneficial for several reasons. The first is greater accuracy in reporting illness in children. Another is greater accuracy in reporting the products of largely female-tended garden plots. Perhaps the problem could be resolved in the future by having teams made up of both men and women who could interview households in tandem.

A major problem in any epidemiological survey of malaria in Africa is imprecise diagnosis. In this survey, the respondent's diagnosis was accepted as fact. Short of a detailed clinical investigation, there is no alternative in this context. The vast majority of cases treated by health facilities are unconfirmed by a blood smear examination. Conversely, many conditions exacerbated by malaria, such as anemia or malnutrition, will remain unexamined in an investigation of "malaria" cases.

Undoubtedly, there is much overreporting of malaria, particularly among adults. Illness of many sorts is attributed to malaria, even non-febrile illness. This investigation attempted to phrase questions that would elicit information that was as accurate as possible. The Chichewa vocabulary for malaria fever and symptoms is complex. Different types of fever are recognized, each with a different etiology and some with a

specific, culturally recommended treatment (Helitzer-Allen, 1989). The input of knowledgeable social scientists is necessary throughout the design, conduct and analysis of surveys that depend on such communication issues.

To estimate costs, the number of adult episodes of malaria p.. 'ear was halved from the rate estimated from survey responses (6.2 episodes per year). If the higher rate is used, the average household direct expenditure on treatment of adult episodes rises from MK 40.71 to MK 61.78 per year. The average indirect cost of time loss increases from MK 53 to MK 84 per household per year. These higher estimates increase the burden of malaria from 7% to 9% of yearly household income.

This survey has provided valuable information on the attitudes and behavior of Malawians regarding malaria. This information can be a solid basis for discussion of alternative strategies for malaria control, planning of health messages about malaria, anticipating community response to changes in resource allocation for malaria, and interpreting routine epidemiological records. Future follow-up surveys should strive, however, for a fuller role for anthropologists and other social scientists completely conversant with cultural factors influencing both malaria-related behavior and the success of the survey design.

12. Programmatic Indicators

One of the specific objectives of the Malaria KAP Survey was to develop programmatic indicators that could be used to monitor NMCP progress toward stated goals. The two indicators were identified:

1. The proportion of children with fever who receive an appropriate dose of antimalarial medication within 48 hours of illness onset (24 hours in the case of severe illness).

   Data from the survey indicate that 88% of children under five (121 of 137 children) with an episode of malaria fever not judged severe by the caretaker received antimalarial by the second day of illness onset. Of the 115 under-fives with an episode of severe malaria, 51% received antimalarial medication on the first day of illness. By the second day, 84% had received medication. However, only one-fourth of all children under five receive an appropriate dose.

2. The proportion of pregnant women who report receiving and taking antimalarial chemoprophylaxis during their most recently completed pregnancy.

   Findings of the KAP survey reveal that, of the 767 women reporting a completed pregnancy during the past five years, 93% attended an antenatal clinic at least once during the pregnancy. Almost three-fourths off these attenders reported that they had been given chloroquine chemoprophylaxis and 481 said they had consumed it all. The attenders who reported taking a full prophylactic dose represent 56% of the 852 women pregnant during the last five years who were interviewed. The women's reporting of chloroquine receipt closely matched the records of chloroquine administration on their antenatal cards.

13. Policy Implications of the KAP Survey Findings

Policy implications and program recommendations elaborated by the MOH's Community Health Sciences Unit are presented below under the four objectives of the KAP survey.

1. **Gather information relevant to health education messages.**

- Messages must be designed for a largely uneducated population as a high proportion of heads of households (especially women) have no formal education.

- There is a need to understand mothers' perceptions of disease severity and to increase use of health services for severe cases. Similarly, home treatment of "non-severe" cases may be appropriate, assuming the mother's diagnosis of severity is correct. The proportion of severe cases going to clinics should exceed the current 59%.

- Only 56% of children and adults with malarial fever reported receiving an antimalarial drug. Messages need to be clear to increase that proportion.

- Government hospitals and clinics care for two-thirds of children with fever; CHAM and private facilities care for the other third (Table 13). Health education efforts should extend to all sectors and all facilities.

- Approximately one-half of all antimalarial drugs acquired to treat fever episodes do not come from hospitals or clinics. Thus, shopkeepers and pharmacies are important target audiences for education campaigns about drug dosage.

- Despite years of chloroquine use and health education messages, less than 30% of children are reported to receive an appropriate dose (Table 17). This has important implications for the launch of sulfadoxine/pyrimethamine as the first-line drug. The message for SP dosing must be clear!!

- Ten percent of children attending government clinics and 43% of those attending CHAM facilities receive an injection for malaria. This represents a gross overuse of injectable drugs and should be curtailed.

- With 83% of women perceiving malaria as a problem in pregnancy and 68% thinking that antimalarials can prevent it, there is a need for increased awareness of the problem and management of malaria in pregnancy.

- Use of malaria preventive measures is very low and income-dependent. Educational messages are required to improve understanding and use of these measures. These messages must include teaching that mosquitoes transmit malaria, as only 55% of household heads reported this as the cause of malaria fevers.

- With only one-third of households owning a radio, health education messages must use a variety of media to be widely effective.

- In certain areas with locally based public health projects, use of preventive measures can be much higher (e.g. SLADD). There is much room for improvement and response to health education and local programs.

2. **Develop programmatic indicators.**

- The average number of fever episodes per child younger than 10 is 7.6 per year. This rate of fever episodes is higher among under-fives. Effective therapy with SP should reduce this rate by limiting recurrences of the same infection.

- Drug requirements based on fever episodes can be calculated using 7.6 episodes per year per child and 3.1 episodes per year per adult applied to the total population in these two age groups.

- Fever/malaria severity is quite high if vomiting (31%) and convulsions (5%) are good indicators of severity. Earlier home therapy may reduce disease severity if SP can be made available locally and in households to treat children.

- Only 63% of children with malarial fever are reported to receive an antimalarial drug. This must be improved.

- The proportion of children with "severe" malaria who attend clinics should be increased from the current 59%.

- Among all child cases taken to a clinic, 78% were taken within two days of illness onset. This is reasonably good timing and should be encouraged, especially for severe cases.

- A high proportion of adults with fever attending CHAM facilities receive both antimalarials and antibiotics. This practice should be examined since it is twice the rate at which such patients receive antibiotics in government facilities.

- Use of injectable drugs for fever in children must be examined carefully and reduced from the current rate of 43% in CHAM facilities.

- Among recently pregnant women, 93% attended antenatal clinic at least once. This attendance rate is good and should be continually promoted.

- Only 4.6% of households may be protected by bed nets. Because bed net ownership is closely linked to household income, both use and income must be monitored to evaluate improvements in bed net use.

3. Understand constraints on the use of services and access to treatment and prevention.

- Any intervention that needs to be used by a large proportion of the population must be affordable to the 40% of households with an annual income less than MK 328 (Table 5).

- A mother's perception of disease severity is an important determinant of health services use.

- Adult fevers with a duration of 6.6 days and adult hospitalizations for malaria with an average stay of 7.7 days suggest that these fevers may not be due to malaria.

- Malaria illness would be expected to be acute and to respond rapidly to antimalarial medication. Adult fever may be caused by other diseases (especially HIV/AIDS) and misdiagnosed and treated inappropriately. Misdiagnosis and unnecessary treatment may be a substantial drain on drug supplies and could lead to overuse of SP. The issue of diagnosis in adult fever should be investigated further.

- Half of the antimalarials taken come from shops and vendors or home supplies (Table 15). SP must be made widely available if it is to reach these important sources.

- Household income and the distance to a facility are critical determinants of clinic use and these two factors may be codetermined.

- The recent recommendation for SP to be used in pregnancy only under supervision at a clinic means that compliance in attendance is the only requirement. Unlike chloroquine treatment/prophylaxis during pregnancy, SP will not require compliance in home dosing. However, the reported incorrect instructions for prophylactic dosing with chloroquine given at clinics suggests that SP doses must be made clear to all antenatal clinic workers.

4. Assess the costs of malaria in economic terms.

- As expected, use of malaria prevention measures is very closely linked to household income (Table 20). However, among using households, annual expenditure on sprays is high (MK 127.80) compared to coils (MK 37.68) and bed nets (MK 37.26). Presumably resources in using households could be better spent on bed nets impregnated with insecticide if they were available.

- The average annual cost to a household of MK 40 for treatment and MK 7.40 for prevention suggests that there is a poor balance between these expenditures. In addition, since 40% of households have an annual income of less than MK 328, expenditure on treatment exceeds 10% of these households incomes. This reflects a tremendous drain on family resources.

- Interventions must be affordable to the 40% of households with an annual income less than MK 328 if there is to be widespread coverage and access to malaria treatment and prevention. As a public health strategy for malaria control continues to develop, this reality must be considered and addressed.

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Appendix A

Personnel Involved in the 1992 Malaria KAP Survey

Dr. L. Chitsulo, Officer-in-charge, Community Health Sciences Unit. Field supervision, data analysis, policy recommendations.

Dr. Y. Nyasulu, Disease Control Coordinator, Community Health Sciences Unit. Training, field supervision.

Mr. Alan Macheso, former Programme Manager, National Malaria Control Programme. Training, field supervision.

Mr. Edwin Nkhono, Health Education, Ministry of Health. Training, field supervision.

Dr. Michael Olivar (deceased), Epidemiologist, Community Health Sciences Unit. Study design, training.

Dr. Mary Ettling, consultant, VBC Project. Training, field supervision, data analysis, report writing.

Dr. Richard Steketee, Malaria Branch, Centers for Disease Control and Prevention (CDC). Study design, training, data analysis.

Dr. Linda Schultz, Malaria Branch, CDC. Study design, training, field supervision, data analysis.

Mr. Charles Ziwa, Programme Manager, National Malaria Control Programme. Report writing, policy recommendations.

Dr. Anne Fleuret, consultant, VBC Project. Study design.

Dr. Joel Breman, Malaria Branch, CDC. Study design.

Dr. Deborah McFarland, Malaria Branch, CDC. Study design, data analysis.

Dr. Okey Nwanyanwu, advisor, National Malaria Control Programme. Data analysis, policy recommendations.

Appendix B

Objectives of the Malaria KAP Survey

General objectives

The objectives of the KAP survey of malaria-related health practices were to provide the National Malaria Control Programme (NMCP) with the following:

1. Information to be used in developing health education messages about malaria, particularly aimed at managing febrile illness in young children and preventing malaria in pregnancy.

2. Programmatic indicators for monitoring NMCP progress toward stated goals, particularly the reduction of human-mosquito contact and the resulting malaria morbidity in the community.

3. Information about constraints on use of and access to treatment and prevention.

4. Information about household expenditure on media treatment and prevention.

Specific Objectives

The KAP survey addressed particular aspects of malaria control for specific purposes, as outlined below.

1. For the development of health education messages, determine

   i. current practices for management of fever in children younger than five;

   ii. current practices and attitudes among women of childbearing age about antenatal care and malaria prevention;

iii. current household malaria prevention practices, including use of mosquito nets, coils, repellents, and other local methods such as burning of herbs or dung, and economic and attitudinal barriers to prevention; and

iv. current awareness of health messages about malaria treatment and prevention; access to mass media.

2. For the development of programmatic indicators, determine the proportion of

   i. children with fever who receive an appropriate dose of antimalarial medication according to national guidelines within 48 hours of illness onset (24 hours in the case of severe illness); and

   ii. pregnant women who report receiving and taking antimalarial chemoprophylaxis during their most recently completed pregnancy (within the last five years).

3. For understanding the constraints on use of services and access to treatment and prevention, determine

   i. where malaria illness is treated (household, government, mission, private or traditional) and access to treatment (distance travelled and costs incurred) for both adults and children.

   ii. the proportion of households using specific preventive measures (nets, coils, repellents, etc.), cost incurred in the use of each and reasons if not used;

   iii. maternal perception of the severity of illness in children; and

   iv. adult perception of the "best" treatment for malaria, etiology of the disease and the risks of malaria in pregnancy.

4. For assessment of the economic impact of malaria, determine

   i. household economic resources and current expenditures on malaria treatment and prevention; and

   ii. the duration and severity of adult malaria illness episodes and the time adults spend caring for children with malaria.

Appendix C

Cluster Locations and Map for the 1992 Malaria KAP Survey

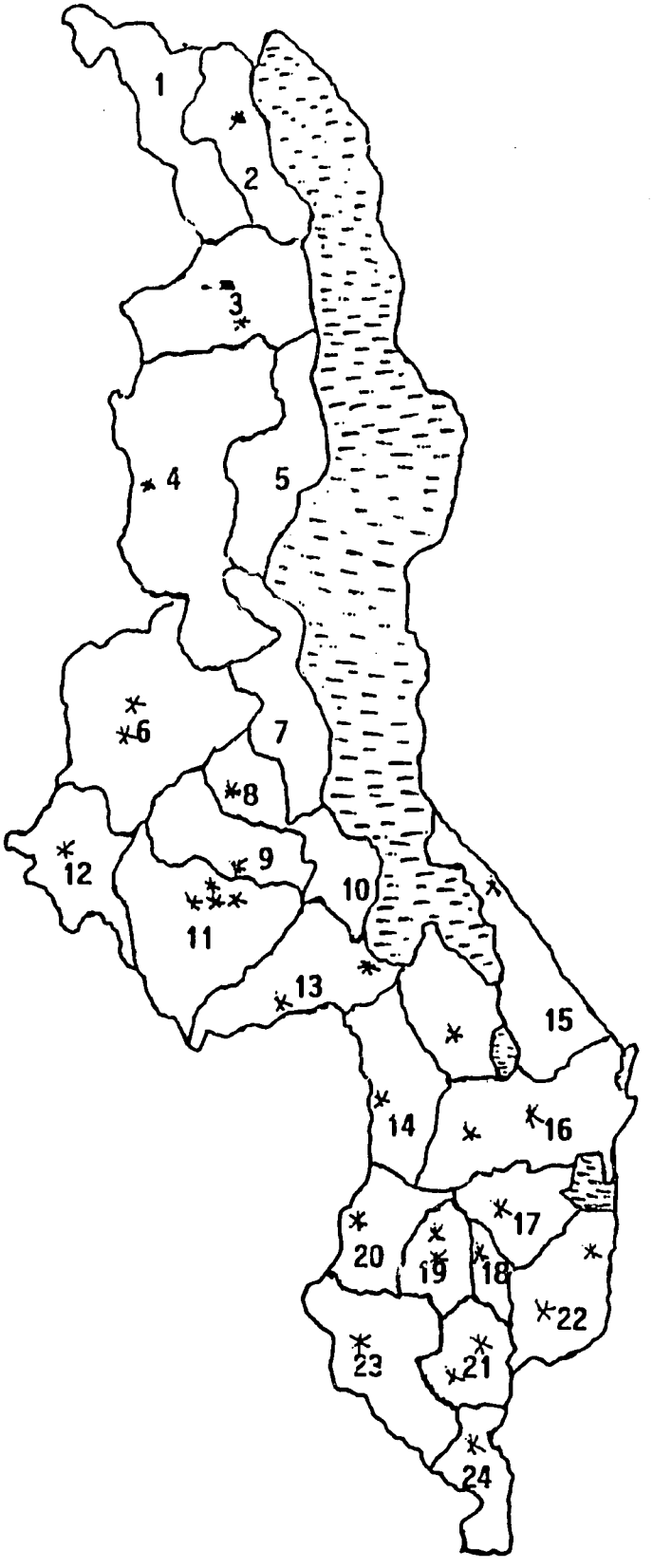
No.	District	TA	EA	Village
01	Karonga	Kyungu	036	Cheghama
02	Rumphi	Mwahenga	001	Mkhalira
03	Mzimba	Chindi	802	Euthini
04	Kasungu	Township	703	Kasalika
05	Kasungu	M'nyanja	008	Mzimuli & Qumayo
06	Nchisi	Chiloko	011	Mizondo & Njakwa
23	Dowa	Mukula	020	Kawaza
07	Lilongwe	City	164	Area 23
15	Lilongwe	Chiseka	021	Bongwe
22	Lilongwe	Kalumbu	011	Mwachilolo
30	Lilongwe	Chadza	029	Chilowa
08	Mchinji	Zulu	010	Chidambo & Chalilima
13	Dedza	Pemba	034	Mchenga & Sitifano
14	Dedza	Kachindamoto	005	Songwe
12	Ntcheu	Njolomole	002	Malijani
09	Mangochi	Chimwala	053	Mwachikumba
10	Mangochi	Katuli	002	Kwisimba
11	Machinga	Kalembo	010	Maleta
16	Machinga	Chamba	008	Chimombo
17	Zomba	Mbiza	106	Mphalasa
18	Chiradzulu	Mpama	039	Nkola
28	Blantyre	Lundu	802	Tepeka
29	Blantyre	City	143	Chipatala Ave.near QECH
21	Mwanza	Dambe	008	Kumbweni
24	Thyolo	Kwethemule	029	Maharipa
25	Thyolo	Thomas	006	Jeloemia
19	Mulanje	Mkhumba	154	Romoliwa
20	Mulanje	Nthiramanda	030	January
27	Chikwawa	Chapananga	055	Chapata
26	Nsanje	Mlolo	044	Ngena

Figure 3. Map of Survey Cluster Locations

* Cluster Locations

65A

1. Chitipa
2. Karonga
3. Rumphi
4. Mzimba
5. Nkhatabay
6. Kasungu
7. Nkhotakota
8. Ntchisi
9. Dowa
10. Salima
11. Lilongwe
12. Mchinji
13. Dedza
14. Ntcheu
15. Mangochi
16. Machinga
17. Zomba
18. Chiradzulu
19. Blantyre
20. Mwanza
21. Thyolo
22. Mulanje
23. Chikwawa
24. Nsanje



Appendix D

Malaria KAP Survey Procedural Rules

I. Introduction to a District

A. Discuss the survey location and accommodations with the DHO.

B. Settle in accommodation and plan travel to village.

C. Travel to village and meet village head, deputy head or MCP chairman.

D. Explain the survey and introduce yourself.

E. Ask for someone from the village to walk with you in numbering houses.

F. Locate the center of the village.

II. If There are Problems with the Randomly Chosen Village

A. IF there is a funeral in the first listed village that makes the survey impossible, move to the second listed village, and so forth.

B. IF none of the three listed villages is possible, move in the direction of the next enumeration area (to 34 from 33, for example) until the next village is located.

III. House Numbering

A. At the center of the village, spin a bottle or pen to determine direction. IF there are no houses at all in that direction, move the line clockwise until it points to at least one house in the village.

B. Walk the line from the center to the limit of the village, counting all houses along the line.

C. Select a number from the table (have one person shut her eyes and point to the table). IF the number does not fall between one and the number of houses on the line, move to the right in the table until you come to a number that does.

D. Mark the house that was counted with the chosen number along the line. THIS IS HOUSE NUMBER 01.

E. Now forget the line.

F. Move to the house nearest house 01. Mark it 02 and so forth until 51 houses are marked. IF there are two or more houses at an equal distance from house 01 (or any other house), stand at the door of house 01 facing out and move to the right, i.e. clockwise, to find the first of the equidistant houses. Mark this house 02.

   IF there are no more houses in this group, determine the closest unmarked house in another group and proceed.

G. IF a marked house is determined to be empty or not a separate household, take its number and move it to the closest house to house 51.

IV. If There are not 51 Households in the Village

A. Move to the second listed village, then the third and then towards the next enumeration area, as described in II above.

V. Defining A Household

A. Ask the head of the household who his/her dependant children are.

B. Anyone who still works the parents' plot, even if he/she sleeps under a separate roof, is part of the household.

C. A child who works his/her own plot or land and sleeps under a separate roof is part of a separate household.

D. In the case of polygamy: if the wife works her own plot and lives separately with her children, she is part of a separate household. If the wife works only her husband's plot, she is part of his household, even if she sleeps under a separate roof. The husband is listed in the household with his first wife or the wife who works his plot with him.

E. Visitors, servants and relatives, should be included in the household if they have been living in it for at least one month.

F. Members of the household who also live elsewhere, such as boarding students or those who work elsewhere, are to be included in the household if they spend more days at home during a month than away. Otherwise, do not count them in the household. Do not forget to include their earnings, however, if they send them home.

VI. Choosing an Adult with Malaria For Part II

A. Look at the list of adults on p. 2 who report illness during the past two weeks. REMEMBER, an adult is any person 10 years or older.

B. IF there is only one adult with malaria, you must interview this person.

C. IF there are two, choose one with a coin toss. Heads are up the table and tails down.

D. IF there are three or more, use sequential coin tosses to choose one. Heads are always the higher person in the table.

E. IF no adults report illness during the past two weeks, determine which adult had the most recent attack since New Year's Day.

F. IF no adult has had an attack since New Year's Day, write your code at the top of p. 3; you cannot do Part II.

G. IF the person chosen is under 13 years old, interview him/her with the mother or father present.

VII. Choosing a Child with Malaria for Part III

A. Look at the list of children on p. 2 who reported illness during the past two weeks. REMEMBER, a child is a person younger than 10.

B. Choose a single child following the procedure outlined above for Part II.

C. Interview the child's mother or primary caretaker.

VIII. Choosing a Woman to Interview for Part IV

A. Determine which woman in the household was most recently pregnant. REMEMBER, this means a completed pregnancy that ended in a live birth, stillbirth or abortion.

B. Interview this woman. IF she has not been pregnant during the last five years, the interview will stop at question 6 on p. 13.

C. IF no woman in the household has ever been pregnant in her whole life, write your interviewer code at the top of page 12 in the blank provided.

IX. Team Leader Responsibilities

A. Mark all 51 houses.
B. Assign interviewers to houses.
C. Collect and check forms as they are finished. Fill all distance blanks as appropriate using maps or by asking the DHO.
D. Reinterview following the rota in the team leader book.
E. Perform at least three interviews per cluster yourself.
F. Keep the team on schedule and finish all 51 interviews per cluster.
G. Assist your team members in introducing themselves and explaining the survey.

H. Help your team members solve problems and answer questions about the interviews and other aspects of the survey in each cluster.
I. Be prepared to show your book, the completed forms and reinterviews to the supervisor as requested.
J. Maintain all maps in good order.
K. Maintain both unused and completed forms in good order.
L. Organize daily work and transportation efficiently and fairly.

X. Team Leader Equipment

A. Pencils and pens
B. Necessary questionnaire forms
C. Chalk for marking houses
D. Ruler for calculating distances
E. Team leader notebook with random number table, schedule and guidelines
F. Maps of all traditional authorities to be surveyed

Appendix E

Questionnaire

Community Survey

Part I - General Household Information

House code	_____	_____	_____
	Interviewer	Cluster	House

Team Leader's signature _____

Date of interview _____ / _____ /92___
Day Month Year

****
*
After introducing yourself to the the first person you meet in the household, ask to speak to the man head of the household and the woman head of household. Write the time that the interview starts below. Fill in the time that the interview ends when you have finished with Part VI.
****
*

Time interview starts	_____ | _____ hour min
Time interview ends (fill in at end)	_____ | _____ hour min

****
*
Find a comfortable and private place to interview the head of household and begin:
****
*

1. We are working with the Ministry of Health on a national survey of health problems in Malawi. We are trying to find ways to improve the health of families in Malawi. All of our work is confidential in the sense that we need you to tell us about personal issues but these will not be told to anyone else. We need to know about all the members of your household and, particularly the children born to your family. Please start with your first born child and tell me the names of all children born to you; then tell me the names of all other persons living in the house, including wives or husbands of your children or guests who are living with you for more than one month.

****

House code _____ _____ _____
Interviewer Cluster House

Part I
Page 2

Interviewer: Begin with the head of household and his/her spouse and then each child (by birth order) and member of the household, complete the table below. After they name all children and other household members, ask again if there are any others that haven't been named. If yes, record their information.

No.	Last Name, First Name	Age yrs	Male=1 Female=2 (circle)	Married Single M=1 S=2	Education years completed	Occupation see codes*	Fever in <14 days Y=1,N=2, Unk=9
01			M=1 F=2	M=1 S=2			
02			M=1 F=2	M=1 S=2			
03			M=1 F=2	M=1 S=2			
04			M=1 F=2	M=1 S=2			
05			M=1 F=2	M=1 S=2			
06			M=1 F=2	M=1 S=2			
07			M=1 F=2	M=1 S=2			
08			M=1 F=2	M=1 S=2			
09			M=1 F=2	M=1 S=2			
10			M=1 F=2	M=1 S=2			
11			M=1 F=2	M=1 S=2			
12			M=1 F=2	M=1 S=2			
13			M=1 F=2	M=1 S=2			

This number is the ADULT/CHILD NUMBER in the person code

*Occupation coded as 01=under school age; 02=at school; 03=farming(household's land); 04=agricultural laborer; 05=non-agricultural laborer(for wage); 06=semi-skilled worker(driver, guard, messenger, industrial); 07=skilled worker (secretary, clerical, technical, sales, soldier, policeman); 08=professional/managerial; 09=small-scale business(informal sector,own); 10=business(formal sector, own); 11=teacher/nurse/health assistant; 12=houseworker(in household); 13=fisherman; 14=TBA,VHW,HSA,etc. 15=unemployable(elderly,disabled); 15=other_____

Count all the living children <10 years [____]

Count all living adults >=10years [____]

Community Survey
Part II - Adult with Malaria/Fever

Person code	_____	_____	_____	_____
	Interviewer	Cluster	House	Adult

****
Interviewer: Go to the list of household members. If any adult household members (≥10 yrs) reported malaria illness, prepare one Part II form for one person, writing in the person code above and their name and age below. If only one person had fever/malaria in the last 2 weeks, choose that person. If more than one person had fever/malaria in the last 2 weeks, choose one by means of a coin toss. If none of the adults in the household report a fever/malaria in the last 2 weeks, choose the person with the most recent fever illness (regardless of when it occurred).
****

IF NO ADULT WITH FEVER IN THIS HOUSEHOLD, ENTER INTERVIEWER NUMBER [____]

Name:_____ Age:_____

---

1. When did your fever start? Within last 2 days.....=1.....1. [____]
   Between 3 days - 2 weeks..=2
   More than 2 weeks ago.....=3
   Don't know .....=9**(go to part III)**

---

2. Are you still suffering from fever today? **Yes=1 No=2**....2. [____]

2. How many days did you have fever?.....**(in days)**.2a.[____]

---

3. When you had fever and before you had treatment or medicine, what other symptoms did you have in addition to the fever?
Put a 1 in each spontaneous response; Then ask:"What other problems did you have?" Put a 1 in each positive response. Then fill in the blanks with 2s.

3a. Shivering/shaking .....3a. [_____]
3b. Diarrhoea .....3b. [_____]
3c. Vomiting .....3c. [_____]
3d. Cough or Rapid Breathing .....3d. [_____]
3e. Convulsions .....3e. [_____]
3f. Headache .....3f. [_____]
3g. General Body pains.....3g. [_____]
3h. Other symptoms_____3h. [_____]

---

4. Were you sick enough that it affected your work or studies? . 4. [____]
   Yes=1, go to 4a
   No =2, go to 5

4a.Were there days when you worked, but not as much as usual?...4a. [____]
   Yes=1 go to 4c
   No=2 go to 5.

4b.**If yes,** How many days were you like this?.....**(days)** 4b. [____]

4c.Were there days when you did not work at all?**Yes=1 go to 4d**..4c. [____]
   No=2 go to 5.

4d.**If yes,** how many days of work did you miss? .....**(days)**.4d. [____]

4e.Did someone have to help with your work?.... **Yes=1 go to 4f**..4e. [____]
   No=2 go to 5

4f.Did you have to hire someone to help?.....**Yes=1 go to 4g**..4f. [____]
   No=2 go to 5

Person code	_____	_____	_____	_____
	Interviewer	Cluster	House	Adult

5. What did you do **first** when you had this fever?
*****Interviewer instructions: Circle a 1 in column 1 next to the first spontaneous response given; Then say:**

5. What did you do **next**?.
*****Interviewer instructions: Circle a 2 in column 2 next to the second spontaneous response given;**
Tnen prompt for each question not answered. Circle a 3 in column 3 if YES; or a 4 in column 4 if NO; or a 9 in column 9 if unknown or cannot remember.

Intervention		1 Did First	2 Did Next	3 Prompt YES	4 Prompt NO	9 Prompt D.K.
Go to a clinic/hosp or doctor	5a	1	2	3	4	9
Go to a Traditional healer	5b	1	2	3	4	9
Go to a HSA or VHW	5c	1	2	3	4	9
Change your diet	5d	1	2	3	4	9
Drink more water/fluids	5e	1	2	3	4	9
Take antimalarial(prompt)	5f	1	2	3	4	9
Take aspirin/panadol/other	5g	1	2	3	4	9
Take other drug	5h	1	2	3	4	9
Take herbs	5i	1	2	3	4	9
Did nothing	5j	1	2	//////	//////	//////
Other _____	5k	1	2	3	4	9

****
*** If the person DID go to a clinic/hospital/doctor, go to question 6:**
If the person DID NOT go to a clinic/hosp/doctor, skip to question 13.
****

6. On which day of fever did you go to the clinic/hosp/doctor?.... 6.[____]
(1 = first day, 2 = second day, and so on. 99 = don't know)

6a. Was it a government or private facility? .....6a.[____]
Government=1 Mission(PHAM)=2 private=3

6b. What did they say was wrong with you?
Enter 1 for all answers given spontaneously. Then say:
What else did they say was wrong?
Again, enter 1 for all answers given spontaneously.
Then fill in blanks with a 2.

		Yes=1 No=2
1. Malaria	6b1.	[_____]
2. Diarrhoea	6b2.	[_____]
3. Chest infection	6b3.	[_____]
4. Throat infection	6b4.	[_____]
5. Wasnt told	6b5.	[_____]
8. Other _____	6b8.	[_____]
9. Don't know	6b9.	[_____]

Person code	_____	_____	_____	_____
	Interviewer	Cluster	House	Adult

6c. The next questions are about what they did for you at the clinic.
Did they give you tablets at the clinic.....**Yes=1** 6c. [_____]
No=2 go to 7.

6d. **If yes,** what kind of tablets did they give you? **Yes=1 No=2 Unk=9**

Interviewer: probe as necessary

Chloroquine/Norlon.....6d. [____]
Fansidar.....6e. [____]
Quinine.....6f. [____]
Camoquine/amodiaquine.....6g. [____]
Antibiotics (penicillin,bactrim,etc.)...6h. [____]
Antifever medicines (asprin,etc.).....6i. [____]
Other(specify)_____ 6j. [____]
Unknown .....6k. [____]

7. Did they give you injections at the clinic.....**Yes=1** 7. [_____]
No=2, go to 8

7a. **If yes,** what kind of injections did they give you? **Yes=1 No=2 Unk=9**

Interviewer: probe as necessary

Chloroquine.....7a. [____]
Quinine.....7b. [____]
Antibiotics (penicillin,bactrim,etc.)...7c. [____]
Other(specify)_____ 7d. [____]
Unknown.....7e. [____]

8. How much did you pay for the consultation?.....**(kw/tamb)** ....8.[___.__]

8a. How much did you pay for the treatment? **(kw/tamb)** ...8a.[___.__]

9. Where is the clinic you went to? **(name of place)**_____

(to be filled by team leader) Distance from residence..... 9. [_____] Km

10. How many other adults from your home escorted you? .....10. [____]

11. How much did transport for all of you cost?..... **(kw/tamb)**.11.[___.__]

12. Were you admitted to the hospital?..... **Yes=1** .....12.[____]
No=2 go to 13.

12a. How many days were you in the hospital? .....12a.[____]

12b. How much did you pay for the hospital stay? ..**(kw/tamb)**..12b.[___.__]

12c. How much did you have to spend on food or other supplies while you were at the hospital? ..... **(kw/tamb)**.12c.[___.__]

13. **Interviewer: if the person reported going to a traditional healer in question 6, ask the following questions. If not, go to 14.**

13a. How much did you pay the traditional healer for.....13a.[___.__]
consultation? **(kw.tamb)**

13b. How much did you pay for treatment?**(kw.tamb)**..... 13b.[___.__]

13c. Where did you see the traditional healer? **(name of the place)**

Person code	_____	_____	_____	_____
	Interviewer	Cluster	House	Adult

14. **Interviewer: if the person reported taking any drugs in question 5, ask the following questions. If not, go to 15.**

14a. Did you get any drugs or injections not from a clinic?... 14a.[____]
Yes=1
No =2, go to 15
Unk=9, go to 15

14b. Where did you get the drug or injection you took?

Enter 1 for all answers given spontaneously. Then say:
Where else did you get drugs?
Again, enter 1 for all answers given spontaneously.
Then fill in blanks with a 2.

	Yes=1 No=2
Employer	14b. [_____]
Pharmacy/chirani	14c. [_____]
Street/market vendor	14d. [_____]
Village health worker	14e. [_____]
Had it at home	14f. [_____]
Grocery	14g. [_____]
Other_____	14h. [_____]
Don't know	14i. [_____]

14j. Did you receive tablets or an injection?.....14j. [_____]
tabs=1, go to 14k
injection=2, go to 14p
both=3, go to 14k
other=9, go to 14p

14k. What kind of tablets were they?
Put a 1 in each spontaneous response; Then ask:"Any other drugs?" Put a 1 in each positive response. Then fill in the blanks with 2s.

Antimalarials.....	14k. [____]
Antibiotics	14l. [____]
Antipyretics (asprin)	14m. [____]
Other_____	14n. [____]
Unknown	14o. [____]

14p. How much did the medicine cost?..... **(kwacha/tamb)** 14p.[___.__]

14q. Which was the actual place where you went to get the medicine?
(name of the place) _____

(to be filled by team leader) Distance from residence: 14q. [_____]Km

14r. How much did you have to pay for transport? **(kw/tamb)**.14r.[___.__]

---

15. What do you think is the best treatment for malaria?
Put a 1 next to the first spontaneous response, fill the others with 2.

	Yes=1 No=2
a. Chloroquine and antipyretic.....	15a.[____]
b. Chloroquine only.....	15b.[____]
c. Antipyretic only.....	15c.[____]
d. Fansidar.....	15d.[____]
e. Amodiaquine (Camoquine).....	15e.[____]
f. Other _____.....	15f.[____]

****

Part III - Child with malaria/fever

Then, in the same fashion, select the child (<10yrs old) reported to have malaria illness in the past two weeks and fill out a Part III form for the child. Ask the mother about the child. Fill out one form for one of the children less than 10yrs reported to have fever/malaria within the previous two weeks named in Part I. If there is more than one child, chose with a coin toss. If no child under 10 years had a fever in the previous two weeks, go to Part IV.

Person code	_____	_____	_____	_____
	Interviewer	Cluster	House	Child

IF NO CHILD WITH FEVER, ENTER INTERVIEWER NUMBER HERE [_____]
Questioned in Part III: Childs mother=1; father=2; other=8.....[____]

Name of child:_____ Age:_____

---

1. When did **(say child's name)**'s fever start?.....1.[____]
   Within last 2 days =1
   3days to 2 weeks ago =2
   More than 2 weeks ago=3
   Don't know .....=9**(go to Part IV)**

---

2. Is **(child)** still suffering from the fever? **Yes=1 No=2** ..... 2. [____]

2a. How many days did **(name of child)** have fever? **(in days)** 2a.[____]

---

3. When **(child's name)** had fever, what other symptoms were present in addition to the fever?
Put a 1 in each spontaneous response; Then ask:"Any other problems?"
Put a 1 in each positive response. Then fill in the blanks with 2s.

		Yes=1 No=2
Shivering / shaking	3a.	[_____]
Diarrhoea	3b.	[_____]
Vomiting	3c.	[_____]
Cough, rapid breathing	3d.	[_____]
Convulsions	3e.	[_____]
Skin rash	3f.	[_____]
Other_____	3g.	[_____]

---

4. Was the fever severe? ("high" or "very bad"?)
   Yes=1 -> go to 5..... 4.[____]
   No=2 -> go to 6
   Unk=9 -> go to 6

---

5. How did you know it was severe?
Put a 1 in each spontaneous response; Then ask:"Any other reason that made you think it was severe?" Put a 1 in each positive response. Then fill in the blanks with 2s.

Child was shaking.....5a.[____]
Child had convulsions .5b.[____]
Child wouldn't eat.....5c.[____]
Child felt very hot....5d.[____]
Fever lasted long time.5e.[____]
Child had diarrhea ....5f.[ ]

Person code	_____	_____	_____	_____
	Interviewer	Cluster	House	Child

6. What was the first thing you did when your child had this fever?
*****Interviewer instructions: Circle a 1 in column 1 next to the first spontaneous response given; Then say:**

6. What did you do next?.
*****Interviewer instructions: Circle a 2 in column 2 next to the second spontaneous response given;**
Then prompt for each question not answered. Circle a 3 in column 3 if YES; or a 4 in column 4 if NO; or a 9 in column 9 if unknown or cannot remember.

Intervention		1 Did First	2 Did Next	3 Prompt YES	4 Prompt NO	9 Prompt D.K.
Took to a clinic/hosp/doctor*	6a	1	2	3	4	9
Took to a Traditional healer	6b	1	2	3	4	9
Took to a HSA or VHW	6c	1	2	3	4	9
Changed his/her diet	6d	1	2	3	4	9
Gave more water/fluids	6e	1	2	3	4	9
Gave antimalarial(prompt)	6g	1	2	3	4	9
Gave antipyretic(asprin,etc.)	6h	1	2	3	4	9
Gave other drug	6i	1	2	3	4	9
Gave herbs	6j	1	2	3	4	9
Did nothing	6k	1	2	//////	//////	//////
Other _____	6l	1	2	3	4	9

****
***If mother DID take the child to clinic/hosp/doctor, go to question 7.**
***If she DID NOT take the child to clinic/hosp/doctor, go to question 16.**
****

7. On which day of fever did you take the child to clinic/hosp?.. 7.[____]
(1 = first day, 2 = second day, and so on. 99 = don't know)

8. Was it a government or private facility?.....8.[____]
Government=1 Mission (PHAM)=3 Private clinic=4

9. What did they say was wrong with the child?
Put a 1 in each spontaneous response; Then ask:"What else did they say was wrong with the child?" Put a 1 in each positive response. Then fill in the blanks with 2s.

		Yes=1 No=2
Malaria	9a.	[_____]
Diarrhoea	9b.	[_____]
Chest infection	9c.	[_____]
Throat infection	9d.	[_____]
Wasnt told	9f.	[_____]
Other _____	9g.	[_____]

Person code _____ _____ _____ _____
Interviewer Cluster House Child

10.The next questions are about what they did for your child at the clinic. Did they give him/her tablets at the clinic.**Yes=1,go to 10a.** 10.[_____]
No=2 go to 11.

10a.What kind of tablets/syrup did they give him/her? **Yes=1 No=2 Unk=9**
Prompt for each question with did he/she get....?
Chloroquine/Norlon.....10a. [_ _]
Fansidar.....10b. [_ _]
Quinine.....10c. [_____]
Camoquine/amodiaquine.....10d. [_____]
Antibiotics (penicillin,bactrim,etc.)...10e. [_____]
Antifever medicines (asprin,etc.).....10f. [_____]
Other(specify)_____ 10g. [_____]

11.Did they give the child injections at the clinic.....**Yes=1** 11. [_____]
No=2 go to 12

11a.**If yes,**what kind of injections did they give him/her?**Yes=1 No=2 Unk=9**
Chloroquine.....11a. [_____]
Quinine.....11b. [_____]
Antibiotics (penicillin,bactrim,etc.)...11c. [_____]
Other(specify)_____ 11d. [_____]

12. How much did you pay for the consultation? **(kw/tamb)**.....12.[___.___]

12a. How much did you pay for the treatment? **(kw/tamb)**.....12a.[___.___]

13. Where is the clinic you went to?
(name of the place) _____

(to be filled by team leader) Distance from residence:.....13. [_____] Km

14. How many adults from home escorted the child?.....14. [_____]

14a. How much did transport for all of you cost? **(kw/tamb)**.14a.[___.___]

15. Was the child admitted to the hospital? .**Yes=1, go to 15a** 15. [_____]
No =2, go to 16
Unk=9, go to 16

15a. How many days was **(name the child)** in the hospital?.....15a.[_____]

15b. How much did you pay for the hospital stay? **(kw/tamb)**..15b.[___.__]

15c. How much did you have to spend on food or other supplies while you were with **(name the child)** at the hospital? **(kw/tamb)** 15c.[___.__]

16. **Interviewer: if the mother reported taking the child to a traditional healer in question 6, go to 16a. If not, go to 17.**

Person code	_____	_____	_____	_____
	Interviewer	Cluster	House	Child

16c. Where did you see the traditional healer?
(name the place) _____

(to be filled by team leader) Distance from residence: .....16c.[____]Km

16d. How much did you pay for transport? **(kw/tamb)**.....16d.[___.__]

17. **Interviewer: if the mother reported giving the child any drugs in question 6, go to 17a. If not, go to question 19.**
17a. Did the child get any drugs or injections not from a clinic?17a.[____]
Yes=1 go to 17b
No =2, go to 18
Unk=9, go to 18

17b. Where did you get the drug **(name of child)** took?

Enter 1 for all answers given spontaneously. Then say: Where else did you get drugs? **Again, enter 1 for all answers given spontaneously. Then fill in blanks with a 2.**

	Yes=1 No=2
Employer	17b. [_____]
Pharmacy/chirani	17c. [_____]
Street/market vendor	17d. [_____]
Village health worker	17e. [_____]
Had it at home	17f. [_____]
Grocery	17g. [_____]
Other_____	17h. [_____]
Don't know	17i. [_____]

17j. Did the child receive tablets, syrup or an injection?.17j. [_____]
tabs or syrup=1, go to 17k both=3, **go to 17k**
injection=2, go to 17o other=9, go to 17o

17j. What kind of tablets or syrup did the child receive?
Put a 1 in each spontaneous response; Then ask:"Any other medicine?" Put a 1 in each positive response. Then fill in the blanks with 2s.

Antimalarials.....	17j. [____]
Antibiotics	17k. [____]
Antipyretics (aspirin)	17l. [____]
Other_____	17m. [____]
Unknown	17n. [____]

17o. How much did the drugs cost? ..... **(kwacha/tamb)** 17o.[___.__]

17p. Which was the actual place where you went to get the drug?
(name of the place) _____

(to be filled by team leader) Distance from residence: 17p. [_____]Km

17q. How much did you have to pay for transport? **(kw/tamb)**.17q.[___.__]

18. **Has the mother told you she gave the child an antimalarial drug?**
IF YES, go to 18a. IF NO, go to 19.

18a. On what day of the fever did you first start giving the malaria medicine to **(child's name)**? ..... **(day)** 18a. [____]
Enter 99 for don't know.
18b.Did you give **(name of child)** tablets or syrup? ..... 18b.[____]

Person code	_____	_____	_____	_____
	Interviewer	Cluster	House	Child

18c. **Ask how many days she gave the antimalarial to the child. For each day, ask how many doses were given, and how much was given each time.**

"**On the first day** of treatment, how many many times did you give medicine and how much did you give each time...":
"**On the second day** of treatment, how many many times did you give medicine and how much did you give each time...": "**On the third day** ..." etc.

	Antimalaria Tablets			**Antimalaria Syrup**		
Day of Treatment	Doses /day	Tabs per dose	Totdose in tabs	Doses /day	Tsps per dose	Total dose in tsp
First						
Second						
Third						
Fourth...						
Fifth						
Total dose	/////	////////		//////	/////////	

Total days of treatment given:.....18c. days [____]

Indicate total dose given (bottom of last row):.....18d. [____]
(Fill in with supervisor)

19. When **(name of child)** was sick, someone cared for him/her. Did this interfere with anybody's normal work in the household? 19.[____]
Yes=1, go to 19a
No =2, end of Part III.
Unk=9, end of Part III.

19a. Who cared for the child? **(mother=1 other=2)**.....19a.[____]

19b. Were there days when you (they) did work but not as much as usual?
Yes=1, go to 19c .....19b.[____]
No =2, go to 19d
Unk=9, go to 19d

19c. For how many days didnt you (they) work as usual?.....19c.[____]

19d. Were there days when **(this person)** could not work at all? 19d.[____]
Yes=1, go to 19e
No =2, end of Part III
Unk=9, end of Part III

19e. How many days of work did you miss? .....19e.[____]
(Example is days spent in hospital)

****
This part of the interview is over. Thank you the mother/person interviewed

Part IV - Mother Pregnancy Information

Person code	_____	_____	_____	_____
	Interviewer	Cluster	House	Woman

Fill out a Part IV form for the woman with the most recent completed pregnancy, writing her person code together with her name and age on the top of the form. Then interview the woman and fill out Part IV.

IF THERE ARE NO WOMEN IN THE HOUSEHOLD WHO HAVE EVER BEEN PREGNANT, WRITE YOUR CODE HERE AND GO TO PART V. [_____]
Interviewer

Name: _____ Age: _____

Now I am going to ask you some questions about you and your pregnancies.

1.Do you think malaria is a problem during pregnancy.....1. [____]
Yes=1 go to 1a.
No=2 go to 2.
Unk=9 go to 2.

1a.What problems does it cause?
Put a 1 in each spontaneous response; Then ask:"<u>What other problems does it cause?</u>" Put a 1 in each positive response. Then fill in the blanks with 2s.

Causes abortion.....1a.[____]
Causes stillbirth.....1b.[____]
Causes mother to be sick with malaria.....1c.[____]
Causes fetus/baby to be sick with malaria.....1d.[____]
Causes baby to be born too small and too weak..1e.[____]
Other_____ 1f.

---

2. Can malaria medicine harm a pregnant woman or her baby? ....2.[____]
Yes=1 No=2 Unk=9

3.Can medicine treat a malaria attack? ..... **Yes=1 No=2 Unk=9** 3.[____]

4.Can medicine prevent malaria attacks?..... **Yes=1 No=2 Unk=9** 4.[____]

5.Is it bad for a pregnant woman to take bitter substances?....5.[____]
Yes=1, go to 5a
No =2, go to 6
Unk=9, go to 6

5a. Did anyone tell you this?..... 5a.[____]
Yes=1, go to 5b
No =2, go to 6
Unk=9, go to 6

5b. Who told you this? ..... 5b.[____]
Family member=1
Traditional advisor=2
Traditional birth attendant=3
Other_____ ___=8

Person code	_____	_____	_____	_____
	Interviewer	Cluster	House	Woman

6.Have you been pregnant in the last 5 years? ..... 6.[____]
Yes=1, go to 7
No =2, go to Part V
Unk=9, go to Part V

7. What was the outcome of your most recent pregnancy?.....7.[____]
live child=1 stillborn=2 abortion=3(go to question 8)

7a. When was the delivery date?.....7a.**Date:**[__][__]/[__][__]/[__][__]

8.During that pregnancy,did you attend an antenatal clinic? 8.[____]
Yes=1, go to 8a.
No =2, go to 18
Unk=9, go to 18

8a.What kind of clinic did you go to? .....8a.[____]
Government clinic=1 Mission clinic (PHAM)=2 private clinic=3
Other=8 _____

9. Were you given an antenatal health card?..... 9.[____]
Yes=1, go to 9a.
No =2, go to 13
Unk=9, go to 13

9a. Do you have the card?..... 9a.[____]
Yes=1, Lost=2, kept by hosp=3, other=8_____

****
PLEASE USE ONLY THE ANC CARD FOR THE FOLLOWING INFORMATION
10. If Yes, Interviewer: Ask to see the card, copy the dates of tetanus toxoid doses recorded on the card. Then go to question 11.

	Day	Month	Year
Date of 1st dose	_____ /	_____ /	_____
Date of 2nd dose	_____ /	_____ /	_____
Date of 3rd dose	_____ /	_____ /	_____

11. Count the number of recorded visits on the card (visits) 11.[____]

12. Were antimalarials given? ..... **Yes=1 No=2 Unk=9** 12.[____]

****

Person code_____	_____	_____	_____
Interviewer	Cluster	House	Woman

NOW RETURN TO THE WOMAN AND ASK THE FOLLOWING QUESTIONS: WRITE DOWN THE WOMAN'S REPLIES - DO NOT USE THE ANC CARD FOR THE FOLLOWING QUESTIONS

13. How many times did you visit the clinic that pregnancy? 13.[____]
(unk=99)

---

14. Did you receive any injections at the clinic during your most recent pregnancy to prevent the baby from getting tetanus?.... .... 14.[____]
Yes=1, go to 14a
No =2, go to 15
Unk=9, go to 15

14a.How many injections did you get?.....**(unk=99)**14a.[____]

---

15. Did the health worker give you any medicines? .....15.[____]
Yes=1, go to 15a
No =2, go to 19
Unk=9, go to 19

15a. Did you get iron/folate? **(probe for answer)**.....15a.[____]
Yes=1, go to 15b
No =2, go to 19
Unk=9, go to 19

15b. Did you get malaria medicine? **(probe for answer)** .....15b.[____]
Yes=1, go to 16
No =2, go to 19
Unk=9, go to 19

16.How much malaria medicine did the health worker tell you to take?
2 tablets/week.....=1 .....16.[____]
more than 2tabs/week =2
less than 2tabs/week =3
unknown/dont remember=8

17.Did you take all the medicine you were given? ..... 17.[____]
Yes=1, go to 18
No =2, go to 17a
Unk=9, go to 17a

17a. Did you save any of the medicine? .....17a.[____]
Yes=1, go to 17b
No =2, go to 19
Unk=9, go to 19

17b. For what reason did you save the medicine?
Put a 1 in each spontaneous response; Then ask:"<u>Any other reasons?</u>" Put a 1 in each positive response. Then fill in the blanks with 2s.

for your children when they get fever?. =17b.[____]
for the next time you get fever?..... =17c.[____]
to save a trip to the clinic next time? =17d.[____]
family member gets fever? .....=17e.[____]
I didn't want to take the medicine .....=17f.[ ]**********

Person code	_____	_____	_____	_____
	Interviewer	Cluster	House	Woman

18. Why didn't you visit a clinic during your last pregnancy?
Ask for a spontaneous response; Then probe for <u>Any other reasons</u>. <u>Decide based on these answers what is the true reason. Put a 1 in that box.</u> Then fill in the blanks with 2s.

clinic is too far away..... =18a.[____]
too busy working in the fields..... =18b.[____]
have to wait too long ..... =18c.[____]
family didnt want her to go to clinic =18d.[____]
medicine is not always available .. =18e.[____]
cost of clinic too high ..... =18f.[____]
she didnt want to go or not necessary =18g.[____]
other_____ =18h.[____]

19.Did you consult a traditional advisor? ..... **Yes=1 No=2** 19.[____]

19a.Did you consult a TBA in your last pregnancy? **Yes=1 No=2** 19a.[____]

20.Did you have malaria in your last pregnancy? ..**Yes=1,** ..... 20.[____]
No =2, go to 22
Unk=9, go to 22

21. Did you take any medicine for this malaria? ..... 21.[____]
Yes=1, go to 21a
No =2, go to 22
Unk=9, go to 22

21a.What type of medicine was it? ..... 21a.[____]
Probe for malaria medicine or not malaria medicine
Malaria medicine=1 Not malaria medicine=2 Unknown=9

21b. Where did you get the drug you took?

		Yes=1 No=2
Enter 1 for all answers given **spontaneously. Then say:** <u>Where else did you get drugs?</u> **Again, enter 1 for all answers given spontaneously. Then fill in blanks with a 2.**	Clinic/hospital/doctor	21b. [_____]
	Pharmacy/chirani	21c. [_____]
	Street/market vendor	21d. [_____]
	Village health worker	21e. [_____]
	Had it at home	21f. [_____]
	Grocery	21g. [_____]
	Other _____	21h. [_____]
	Don't know	21i. [_____]

21j. Which place did you go to for the drug?
(name of the place) _____

(to be filled by team leader) Distance from residence: 21j .[_____]Km

21k. How much did you have to pay for transport? **(kw/tamb)**.21k.[___.__]

Person code	_____	_____	_____	_____
	Interviewer	Cluster	House	Woman

211. Who told you that you should take medicine for the malaria?
Put a 1 in each spontaneous response; Then ask: "Anyone else who told you?"
Put a 1 in each positive response. Then fill in the blanks with 2s.

Health worker =211.[____]
Family member =21m.[____]
Traditional advisor =21n.[____]
Traditional birth attendant =21o.[____]
Other_____ =21p.[____]

---

22. **If the answer to 7a is abortion, go to end of PartIV**
If the answer to 7a was livebirth or stillborn, go to 22a

22a. Where did you deliver your baby that time? .....22a.[____]

home with family =1 go to 25
home with TBA =2 go to 25
hospital =3 go to 23
clinic =4 go to 23

---

23. How did you get to the hospital/clinic?..... 23.[____]
Walk=1, Bus=2, Other vehicle=3, Bicycle=4, Other=8_____

23a. Who escorted you to the facility? .....23a.[____]
Husband=1, Female relative=2, Alone=3, Many people=4 Other=8_____

23b. How much did all have to pay for transport? **(kw/tamb)**.23b.[___.__]

---

24. When did you go to the facility for delivery?.....24.[_____]
As a waiting case (before labor pains began) = 1
When the labor pains began = 2
When complications developed = 3

---

25. **if answer to 7 was stillborn go to part V.**
if answer to 7 was livebirth go to question 25a

25a. Is the child who was born still living? .....25a.[____]
Yes=1, go to Part V
No =2, go to 25b

25b. How old was the child when he/she died? **(years, mos=x/12)** 25b.[____]

25c. What was the cause of death? _____

****
Politely thank her for telling you about her pregnancy and go to part V.
****

Community Survey
Part V - Malaria Prevention Measures

House code	_____	_____	_____
	Interviewer	Cluster	House

Interviewer. Please find the head of household for the following section. Start by saying: "Now I want to ask a few questions about your household's use of measures to prevent malaria."

1. What do you think causes a person to get malaria?
Put a 1 in each spontaneous response;Then ask:"Can anything else cause malaria?" Put a 1 in each positive response.Then fill in the blanks with 2s.

Yes=1 No=2

1a. mosquitos.....1a[____]
1b. cold weather.....1b[____]
1c. unclean food/water.....1c[____]
1d. not bathing.....1d[____]
1e. don't know.....1e[____]
1f. other._____1f[____]

---

2. Do you ever buy drugs and take them to prevent malaria?..... 2.[____]
Yes=1, go to 2a.
No= 2, go to 3.

2a.Have you bought any drugs to prevent malaria in the last month?2a.[____]
Yes=1, go to 2b.
No=2, go to 3.

2b.How much did you pay for the drugs?**(kw/tamb)**..... 2b.[____.____]

---

3. Did any household member receive drugs free in a special program in the last 3 months? ... .. 3.[_____]
(an example is chemoprophylaxis during pregnancy)
Yes=1, go to 3a
No =2, go to 4

3a. How often must he/she go for the medicine .... 3a.[_____]
--that is, how many times in the last 3 months?

3b. Where does he/she go to get the medicine
(name the place): _____

(to be filled by team leader) Distance from residence **(km)**..... 3b.[____]

3c. How much money does transport cost to get the medicine?
(kwacha.tambala)..... 3c.[_____.__]

4.Do you ever buy mosquito coils to burn to keep away mosquitoes at night?
Yes=1, go to 4a.....4.[____]
No =2, go to 5
Unk=9, go to 5

4a.Have you bought mosquito coils in the last month? .....4a.[____]
Yes=1,to 4b
No =2, go to 5
Unk=9, go to 5

4b. How many coils did you buy (1 packet=10 coils) 4b.[____]

House code	_____	_____	_____
	Interviewer	Cluster	House

---

5. Do you ever buy insecticide like DOOM cans to spray to kill mosquitoes or to keep away the mosquitoes at night? 5.[____]
Yes=1, go to 5a
No =2, go to 6
Unk=9, go to 6

5a. Have sprays been bought in last month?.....5a.[____]
Yes=1, go to 5b
No =2, go to 6

5b. How many spray cans did you buy last month? .....5b.[____]

5c. How much total did you pay for these spray cans?**(k/t)** 5c.[_____.__]

---

6. Do you have any mosquito nets? .....**Yes=1, go to 6a..** 6.[____]
No =2, go to 7

6a. How many mosquito nets are in the household? ..... 6a.[____]

6b. How many mosquito nets were used last night? ..... 6b.[____]

6c. How many persons slept under mosquito nets last night? ... 6c.[____]

6d. Did you buy a mosquito net in the last year? ..... 6d.[_____]
Yes=1, go to 6e.
No =2, go to 7

6e. How much did that moisquito net cost? **(kw/tamb)**.....6e.[_____.__]

6f. How did you get the bed net? ..... 6f.[____]
homemade=1 gift=2 bought in shop/market=3 other=8_____

---

7. Have you ever bought repellant to spread on the skin to keep mosquitos away? .....7.[____]
Yes=1, go to 7a.
No =2, go to 8.

7a. Has any repellant been bought in the last month? .....7a.[____]
Yes=1, go to 7b
No =2, go to 8

7b. How much did you pay for the repellant? **(kwacha.tambala)**7b.[_____.__]

House code	Interviewer	Cluster	House

8. **Interviewer: ask specifically about each of these methods in the form of the questions above.**

In the last month, did you .....to prevent malaria?

Prevention Measure		Used last month
Burn Leaves or Herbs	8a.	Y=1 N=2
Burn or spread animal dung	8b.	Y=1 N=2
Burn fire in the house	8c.	Y=1 N=2
Other_____	8d.	Y=1 N=2

9. **Interviewer: ask about each of these measures which the person reported NOT using in questions 3 - 7 and ask why they did not use that measure.**

Preventive measure		Why didn't you use: codes*
Burn coils	9a	
Insecticide spray	9b	
Bed nets	9c	
Burn leaves,dung,herbs	9d	
Burn fire in the house	9e	

*** 1=cost too much 2=not effective 3=uncomfortable (dirty, smells, hot...), 4=never heard about it, 5= not necessary, 9=other (write in reason given)**

10. During the past 12 months, did you hear or see any information about malaria? 10.[____]
Yes=1, go to 11.
No =2, end of Part V
Unk=9, end of Part V

11. Where or how did you see or hear about malaria in the past year?
Put a 1 in each spontaneous response; Then ask:"<u>Any place else that you heard of malaria this last year?</u>" Put a 1 in each positive response. Then fill in the blanks with 2s.

Village health worker	11a.[___]
Radio	11b.[___]
Poster	11c.[___]
Told at clinic	11d.[___]
Another mother/neighbor	11e.[___]
Health Education Mobile van	11f.[___]
Other	11g.[___]

(specify): _____

****
Thank the head of household/respondant for answering your questions.
Now go on to Part VI of the Questionnaire.
****

Community Survey
Part VI - Farming/Economic Section

House code	_____	_____	_____
	Interviewer	Cluster	House

Interviewer: This section is on household activities in farming and herding and earning income for the family. Begin by telling the head of household that you would like to ask some questions about their activities in earning a living because diseases like malaria can adversely affect their ability earn a living. Remind the head of household that this information is srtictly confidential.

Interviewer, begin by recording what kind of house this is (enter code)

1a. Walls:
- poles and grass (1) .....1a.[_____]
- poles and mud/mud only (2)
- kimberly bricks-no paint (3)
- kimberly bricks-painted (4)
- burned brick (5)
- other(specify) (8) _____

1b. Roof:
- thatched grass (1) .....1b.[_____]
- tiles (2)
- iron sheets (3)
- other (specify) (8) _____

1c. Windows:
- None (1).....1c.[_____]
- Open or covered with grass/thatch (2)
- Wire mesh and/or Glass (3)

2. Then begin by asking the head of household the following:

2a Do you own land for farming? **Yes=1 No=2** .....2a.[____]

2b. Do you have land for which you pay money or some harvest? 2b.[____]
Yes=1, go to 2c
No =2, go to 2d

2c. How much did you pay last year for the land? **(kw.tamb)** 2c.[____.___]
Or in kind (food)_____

2d. How many acres does the family farm? .....2d.[____]

a1

House code _____ _____ _____
Interviewer Cluster House

3. **Ask specifically about crops grown in the last growing season and enter in the table; record estimated amount of each and the amount of cash sales.**

Crop	Quantity produced	Units:bags basket, ox cart, etc.	Total sold last year (kwacha)	Total sold last year (quantity, units)
Maize				
Millet				
Rice				
Sorghum				
Groundnuts				
Sweet Potatoes				
Irish Potatoes				
Cassava				
Vegetables list:				
a. _____				
b. _____				
c. _____				
d. _____				
e. _____				
f. _____				
Tobacco				
Others (list)				
a. _____				
b. _____				
c. _____				
d. _____				

Interviewer:**If the amount produced was very little, or only a small amount used for the family, write 0 for quantities**

House code _____ _____ _____
Interviewer Cluster House

4. Do you hire anyone to help with farm work? .....4.[____]
Yes=1,go to 5 or 5a
No=2, go to 6

5. How much did you pay in cash last year? **(kw.tamb)** 5.[_____.__]

5a. How much did you pay in kind last year? 5a._____

6.Have any household members worked for wages or salary in the last month?.....6.[____]
Yes=1, go to 6a.
No =2, go to 7.

6a.**Ask about each adult in the household and enter the information below:**

Person Code	Wages/salary earned last month (kwacha)	Regular or Seasonal R/S*
		R=1 S=2
		R=1 S=2
		R=1 S=2
		R=1 S=2
		R=1 S=2
		R=1 S=2

*** Ask whether the wages/salary is paid every month or varies by season**

7.Does the household receive any other income such as wages sent from family members elsewhere in Malawi or outside of the country? 7. [____]
Yes=1, go to 7a
No=2, go to 8

7a. **If YES:** How much was received last month? **(kw.tamb)** ..7a.[_____.__]

8. Do any household members produce or collect goods, such as mats or baskets, beer, mangoes, firewood, etc., to sell in the market? .....8. [____]
Yes=1, go to 8a
No=2, go to 9

8a. **If YES:** How much income did this produce last month? .8a.[_____.__]

House code _____ _____ _____
Interviewer Cluster House

9. Does the household own any animals?.....9. [_____]
Yes=1 go to 9a
No=2 go to 10

9a.List how many of each:..... a.cows 9a.[_____]
b.goats 9b.[_____]
c.chickens 9c.[_____]
d.sheep 9d.[_____]
e.pigs 9e.[_____]
f.ducks 9f.[_____]
g.rabbits 9g.[_____]
h.pidgeons 9h.[_____]

specify other type and number:_____

9i. Has the household sold animals, eggs or milk for money or food in the last 3 months?.....9i.[____]
Yes=1, go to 9j
No =2, go to 10

9j. How much money was earned from these sales? **(kw.tam)**....9j.[___.___]

10.Do you have income from rental of land, house or other property?
Yes=1 No=2 10.[_____]

10a. **If YES**, how much was this income last month? **(kw.tamb)**10a.[_____.__]

11. Does the household own a:

a. radio? **Yes(1) No(2)** a.[____]
b. bicycle? **Yes(1) No(2)** b.[____]
c. motorcycle? **Yes(1) No(2)** c.[____]
d. oxcart? **Yes(1) No(2)** d.[____]
e. automobile? **Yes(1) No(2)** e.[____]
f. maize mill? **Yes(1) No(2)** f.[____]

Interviewer: Please fill in the code(s) of the person interviewed for the above section:

[ ]

****
This interview is over, Thank the head of household and all household members present for their kind cooperation.
****

When you have finished the Part VI interviews, record the end time of the interview. Check that all the pages have codes on the top. Clip all the forms for this household together, and proceed to the next household.

Go to the next household.

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