COMMUNITY-BASED HEALTH INFORMATION SYSTEMS

A guide for PHC planners and managers in developing countries

Identification of target population

Problem identification

Situation analysis

Annual Planning Cycle

Selecting interventions

Target setting

Implementation

Community-based information

Facility-based information

H.M. ORANGA
AND
ERIK NORDBERG
COMMUNITY-BASED
HEALTH INFORMATION SYSTEMS

A guide for PHC planners and managers in developing countries

This report is presented as received by IDRC from project recipient(s). It has not been subjected to peer review or other review processes.

This work is used with the permission of African Medical and Research Foundation.

© 1997, African Medical and Research Foundation.

H.M. ORANGA
AND
ERIK NORDBERG

ARCHN
002:613
07
# Contents

Forward v

1. Introduction 1

2. Primary Health Care and its Information Needs 3
   - The Concept of Primary Health Care 3
   - Health Care Planning and Management 5
   - Health Management Information Systems 8

3. Information for Local Health Planning: A Review 13
   - Introduction 13
   - The Routine Reporting System 14
   - Household Health Surveys 14
   - Rapid Appraisal Methods 19
   - Descriptive Analysis of the Local Health Care System 15
   - Socio-Cultural Studies 15
   - References 16

4. Health Management Information Systems: 19
   - Organization and Procedures of Health Management
     - Information Systems 19
   - Background and Current Status of the Health Management
     - Information System in Kenya 21
   - Implementation 24
   - Methodology 25
   - Limitations of Community-based
     - Health Management Information Systems 32
   - References 33

5. An Integrated Community-based Health Management Information System: 35
   - A Kenyan Case Study 35
   - The Project 35
   - Descriptive Study of the Health Care System 38
     - Cross-sectional Household Health Surveys 42
     - Longitudinal Household Health Survey 48
   - Delphi Panel Study 55
   - Socio-cultural Health Interview Study 58
   - General Conclusions from the Project 60
   - References 61

ANNEX I: Health Facility Descriptive Study 63
ANNEX II: Kibwezi Cross-section Survey II Household Questionnaire 73
ANNEX III: Longitudinal Survey: Illness Episode Report 85
ANNEX IV: Kibwezi Division Delphi Panel Questionnaire 89
ANNEX V: Kibwezi Socio-cultural Survey Household Questionnaire 95
Foreword

African governments are facing severe resource constraints and finding it increasingly difficult to meet the health needs of their populations. Most modern health care systems in sub-Saharan Africa are highly centralised, but efforts to decentralise management and planning are under-way, encountering a variety of problems. Reluctance of some central bureaucracies to relinquish control is one, and shortage of trained manpower at provincial and district levels is another. A third and less obvious problem is scarcity of such community-based information that provincial, district and subdistrict health managers require for effective local management. This book is addressing the problem of developing health information systems with current resource constraints as an important consideration. The lessons learnt from an operational research study in rural Kenya during the early 1990s form the basis of the book.

We hope that the ideas and the conclusions will contribute to more efficient and effective local health care planning and PHC development in general and to health information systems improvement in developing countries. The development of this book has been financially supported by the International Development Research Centre (IDRC), Canada. The operational Integrated District Diagnosis (IDD) research project, on whose findings the book is based, was funded by IDRC and the Swedish Agency for Research Cooperation with Developing Countries (SAREC). Helpful advice has been obtained from Janet Hatcher-Roberts, Senior Programs Officer at IDRC Ottawa, and Sandro Baldwin, Regional Projects Officer at IDRC, East African Regional Office in Nairobi in technically editing the material.

The authors are grateful to the staff of the local facilities and the administration is greater Kibwezi Division (now split into three, namely, Makindu, Kibwezi and Mitto Andei Divisions) for collaboration and support during the implementation of the IDD Project. We are grateful also to the members of the IDD pilot project team in Kenya, namely Dr. Sam Kazibwe, Mr. Jared Onyango, and Miss Esther Kimanzi for their efforts in support of the project.

AMREF's management, in particular Dr. Michael Gerber, the Director-General, and Professor N.O. Bwibo, Deputy Director-General, provided a research environment facilitating implementation of the project.

H.M. Oranga
Erik Nordberg
November, 1996
INTRODUCTION

Development of community-based health management information systems in Third World countries is not well documented in existing textbooks. Most published texts on health management information systems are appropriate for more developed areas where data available from health facilities is highly complete and well organised, obtained through facility-based health information systems (HIS) or through centrally planned national household surveys. The situation in low-income countries such as Kenya is different for two main reasons.

First, few people in sub-Saharan Africa have access to modern health care. This is basically due to inadequate numbers and inequitable distribution of health facilities. Cost of travel, where means of transport exist, are unaffordable to most of those in need, particularly vulnerable groups such as young women and children. In this situation, a facility-based HIS captures information relating to only a small proportion of ill-health. There is need for more community-friendly methods of collecting health information from households. This book is concerned with the development of methods that are appropriate under the resource constraints in many low-income countries.

Secondly, poor countries have little skilled manpower and computer-based data processing equipment. There is need for a low-technology alternative: compatible with locally available human, physical and financial resources.

This textbook is a product of an applied health systems research project called Integrated District Diagnosis and Planning (IDD) conducted in former Kilwezi Division of Makuenu District in Kenya between 1989 and 1992. The book describes the development and use of community-based health information systems in rural health care management and planning at the sub-district (“division”) level.

The book is aimed at four categories of readers:

i) Policy-makers and health planners involved in monitoring and evaluation of PHC programmes in developing countries;

ii) Survey planners, researchers and consultants in practice;

iii) District Health Management Teams (DHMT) in low-income countries;

iv) Undergraduates pursuing courses in development studies, health planning, health economics, demography, sociology, medical anthropology, psychology, and community medicine at universities.

The organization of the book is as follows:

Chapter 1: states the purpose and intended readership of the book and its structure;

Chapter 2: deals with an introduction to principles underlying community-based primary health care (PHC), health care planning and management, health care financing, and health
information systems. It includes definitions and concepts in epidemiology including the role of epidemiology in health care planning.

Chapter 3: reviews the published literature on health information in relation to health planning and health care management at district level.

Chapter 4: discusses statistical organization and procedures for health management information systems, the historical background of health information systems in Kenya and their current status. It also covers HIS design and implementation under the socio-economic constraints in developing countries and discussions on the limitations associated with a community-based health information system.

Chapter 5: discusses the various options for the development of an integrated community-based health management information system. This chapter includes a summary of the findings of the IDD research project which contributed to the development of this book.
PRIMARY HEALTH CARE
AND ITS INFORMATION NEEDS

THE CONCEPT OF PRIMARY HEALTH CARE
Health is a basic human need, and the level of health is affected by numerous factors including the standard of health services. In low-income countries the health care needs are largely unmet and reduction in mortality rates is slowing down and in some groups reversed. Infant mortality rates have declined in most low-income countries, but the rate of improvement has slowed down. More than half of all child deaths can be attributed to the complex of malnutrition, diarrhoea and respiratory diseases. They are preventable. Only one in three persons in low-income countries has reasonable access to safe supply of water and basic sanitation. The nature and scale of these health and service problems have been described by many authors. The development of health systems based on primary health care (PHC) has been stimulated by the adoption by the 1977 World Health Assembly of "Health for All by the Year 2000" as a main social target and of the Declaration by the 1978 International Alma-Ata Conference adopting "Primary Health Care" as the main strategy.

The PHC approach as a key strategy will require re-structuring and re-orientation of existing health care systems. The main thrusts of the Alma-Ata strategy were:

1) Basic health care reaching the whole population;
2) Individual, household and community health action;
3) Appropriate (low-cost, scientifically sound, and culturally acceptable) technology;
4) A high degree of community involvement;
5) Intersectoral collaboration;
6) International support to national action.

The Declaration states that:

The people have the right and duty to participate individually and collectively in the planning and implementation of their health care. Primary Health Care is essential health care based on practical, scientifically sound and socially acceptable methods and technology, made universally accessible to individuals and families in the community through their full participation and at a cost that the community and country can afford to maintain at every stage of their development in the spirit of self-reliance and self-determination.

Central to the concept of PHC is individuals, families and communities taking responsibility for their own health. PHC should address the health problems in the community by developing promotive, preventive, curative and rehabilitative services. The role of health professionals and
health care systems is to support this process. Professional staff and institutions are supposed to change their roles from service providers to health development enablers.

The PHC elements as identified at Alma-Ata should include at least:

1) Health education concerning prevailing health problems and methods of their prevention and control;

2) Promotion of proper food supply and nutrition;

3) An adequate supply of safe water and basic sanitation;

4) Maternal and child health including family planning;

5) Immunization against the major infectious diseases;

6) Prevention and control of locally endemic diseases;

7) Appropriate treatment of common diseases and injuries;

8) Provision of essential drugs;

   In Kenya and other sub-Saharan countries, two more elements were added:

9) Mental Health;

10) Dental Health;

The PHC strategy can only be effective if applying interactive processes, namely:

1) Collaboration with other service sectors such as education, agriculture, water supply development, community development, communication and transport, and social services;

2) Establishing roots within local communities with involvement of people to develop self-reliance;

3) Support from the formal health care system with regard to health education, training, logistics and referral of problems;

Action programmes to reorient health systems towards PHC must commence at the smallest unit of planning, the district. It is within the district that central planning units face the realities of implementation and where interaction with local communities takes place. Many countries now build district health infrastructures to support PHC. Decentralization stimulates district level initiatives based on local needs. However, district level planning and managerial capability is poor.

For each of the 8-10 essential PHC elements, strengthening and integration is necessary at different levels. In Kenya, seven levels of intervention can be distinguished:

i) Household level (individuals and family members);

ii) Community level (Community Health Workers and TBAs);

iii) Location level (dispensaries and private drug vendors);

iv) Division level (health centres and NGO clinics);

v) District level (district, subdistrict and NGO hospitals);

vi) Provincial level (provincial hospitals);

vii) National level (national referral hospital and Ministry headquarters).

The development of well coordinated PHC programmes is facilitated by guidelines reflecting current policy and past experiences. Kenyan policy aims at increasing the number of communities active in their own health care, reorienting health personnel towards PHC and strengthening collaboration with NGOs in support of PHC. This is the responsibility of District Health Management Teams under the leadership of the District Medical Officers of Health.

Community-based Health Care

A community is a social group made up of people who feel they belong together. Several factors enhance this togetherness:
• A group of families in a small administrative area;
• Sharing goals, problems and a system of communication;
• Being socially and psychologically linked;
• Having common leadership and traditions;
• Living in a defined area where homes can be counted and a census taken;
• Having a mechanism for organizing people within that social entity.

Community participation is the process by which a community takes responsibility for its own development, implements development programmes for health improvement and mobilizes its resources. A community needs to identify its problems through self-diagnosis and set its own priorities. External influence and aid should be kept at a minimum.

Community involvement entails active participation in planning, management and evaluation of programmes, contributes a feeling of responsibility and ownership, and enhances accountability for development programmes. Community-Based Health Care (CBHC) is an expression of community involvement in health development.

Structural Adjustment Programmes (SAP) supported since the 1980s by the World Bank and its affiliate, the International Monetary Fund (IMF) have had negative effects on the social sectors, especially health. The deteriorating economic situation in many African countries has prompted involvement of communities in resource mobilization and the management of PHC. PHC is based on community participation in planning, implementation and monitoring. In this time of decreasing health sector resources per capita, the health system is unlikely to expand its planning and monitoring capacity. It is therefore important that communities take a larger role in planning, implementation and monitoring of their PHC services.

The success of community participation is based on a few assumptions:

1. Involvement will enhance capability of conducting rational health care planning and management. Community participation will improve awareness of the local health situation and the likely effects of various interventions, and improve its willingness to initiate health development activities;

2. Access to broader health information will improve the ability and willingness of communities to analyse local problems and take action;

3. Dependency on community contributions will enhance local community involvement in programme development and monitoring.

HEALTH CARE PLANNING AND MANAGEMENT

Management is a concept which is extensively used in everyday life and yet rarely defined. Management entails three broad functions:

• Planning;
• Implementation;
• Evaluation;

In practice, they are in fact overlapping phases of the planning process. A manager is usually engaged in communication and decision-making related to all three functions. Smooth communication is important in the coordination of the different phases while decision-making provides the means of choosing what is to be done (AKF-aku, 1993).

Planning involves choosing between different means of achieving desired ends. The extension of planning in the social sciences is often referred to as social planning. Health is one sector applying social science. Health care planning is a systematic process of mobilizing information and organizing resources for effective and efficient health care. Efficient planning is based on the analysis of alternative means of moving towards identified health goals translated into objectives and programmes.

There is need to review the planning cycle (Figure 1) in order to understand its steps. The
process begins with the identification of problems in need of solutions, and passes through consideration of optional strategies for solving the problems to a choice of preferred means. The chosen programme is implemented and evaluated. The evaluation phase of the cycle will describe a partly new situation with new problems which need to be addressed by the next cycle.

Figure 1. Annual Planning Cycle.

Planning

The main stages of the planning process are the following:

Stage One: Situation analysis

This stage is an appraisal of the current situation as well as the interactions between the system and its environment, and of internal evaluations of performance. This appraisal includes the definition of the problem, and an assessment of its size, severity, causes and impacts or the community.

Stage Two: Formulation of objectives

Competing demands for limited resources restrict the response of the planning system. In order to allocate the resources effectively, the planning process should formulate optional policies, goals and objectives in the areas of equity, efficiency, and responsiveness to individual or to risk group needs. These needs may conflict and hence require priority decisions. The planning process should express these priorities in terms of goals and objectives.

Stage Three: Choice of strategies

The choice of a strategy from a range of options may be made simply by considering its feasibility in terms of cost or other constraints. Where there are more than one possibility, other procedures are used:
• Probable effectiveness: The term 'effectiveness' is based on external (e.g. outputs) targets. It relates outcomes, expressed in terms of improved health status, to inputs, expressed in terms of the service provided. The term 'effectiveness' is in fact reserved for describing the performance of total services applied to defined target populations;
• Efficiency: This is a measure of the ratio between the quantity and quality of services provided, and the cost of providing them;
• Efficacy: Efficacy relates to the assessment of particular medical and surgical procedures considered in isolation. Like effectiveness, efficacy is also based on external (output) targets;
• Acceptability;
• Timings;
• Adaptability to available staffing or premises;
• Economy;
• Administrative ease and efficiency;

Stage Four: Operational Plan
During this stage of planning, planners are involved in the allocation of resources and authority. Planners are engaged in developing timetables and design of monitoring systems.

Implementation
Implementation means execution of the developed plan and collection of relevant information for monitoring progress. Planning requires an implementation plan. Early planning concentrated on the development of a plan as a document, while implementation was considered the responsibility of the service organizations. Comprehensive planning is a process in which the entire health service system should be involved.

Evaluation
Evaluation relates the outcome of activities to their objectives. Evaluation helps managers ensure that resources are not being misdirected.

The outcomes of evaluation are helpful in several ways: (i) the results provide insights into possible urgently needed reallocations of the resources in order to achieve the original goals and objectives; (ii) the findings could even call for complete overhaul and major changes that eventually would call for fresh situation analysis to be undertaken; new priorities be set and new projects be launched. Thus the planning cycle will evolve again. Figure 1 gives a diagrammatic representation of the planning cycle.

It is important to distinguish between the two terms, 'health planning' and 'health care planning'. The concepts differ both in their range of purposes and in their instrumental pathways. Health planning operates through the modifying of any or all of the determinants of health, including the physical and social environments and patterns of individual and group behaviour, as well as through personal health services. On the other hand, health care planning focusses on the personal health services attempting to select volumes and configurations of facilities, personnel, technologies, equipment and services which will best meet the needs of defined populations within limits imposed by resources and acceptability.

In all stages of planning process, there are constraints. They relate to financial, manpower, legal and ethical factors as well as value systems (community, administrative, social, political, etc.). One important factor is the political influence on planning. Planning policies and goals must be politically determined; policy analysis and political decision-making normally precede planning.

Health care systems comprise several functionally interrelated components. Based upon health problems identified and the needs and demands of various population groups, health
services would mobilize available health resources in order to produce some outcomes in the form of improved health status. Health problems are identified by analysing the population at risk as regards epidemiological indicators and trends, demographic profiles and geographic spatial characteristics of the population.

Once the health needs are identified and local demands for services have been assessed, the system must take stock of the available human, physical and financial health resources required to produce the services. It is important to determine the quantities and locations of different kinds of resources in the public and private sectors. The health services include promotive, preventive, diagnostic, treatment, and rehabilitative components. The health status can be recorded using:

- Indicators reflecting morbidity, mortality and disability;
- Utilization of services such as hospital bed occupancy rates, average outpatient visits per health centre per day, number of deliveries per midwife or traditional birth attendant, and proportion of children immunized;
- Indices that relate to client population such as proportion of child deliveries attended by trained personnel and the proportion of underweight children served by feeding centres.

We have indicated the important role played by planning in health development and in health care management. The information base needed to support the process of sound health planning is discussed in the next section.

HEALTH MANAGEMENT INFORMATION SYSTEMS

A system is a set of interrelated elements, each contributing to the accomplishment of an aggregate activity. The elements and the relationships consist of the resources, the technologies, the activities, and the actors. A health management information system is a combination of people, equipment and data collection and processing methods coordinated to produce information in support of planning and management of a health care system. A system is said to be "open" if there is interrelation between elements within the system as well as between the system and its environment. The system is "closed" if the external relationship is missing.

The words data and information have different meanings. Data means raw observations and measurements in an investigation. Data can be qualitative or quantitative. Quantitative data refers to observations that cannot be measured or counted, but are attributes such as sex, village name, colour of the eyes, degree of severity of illness condition, type of treatment given, outcome of treatment, and so on. Quantitative data are observations that can be measured or counted, e.g. age in years, weight in kgs, population size and income. Information is processed data that supports timely and efficient decision-making. Information can be presented as:

- Textual presentation of the situation as depicted by the data;
- Summary statistics such as averages (means, median, mode, etc.), measures of dispersion (range, standard deviation, standard errors of estimates, coefficient of variation), or measures of skewness;
- Tabulation of raw data into meaningful categories;
- Graphical presentation of the data by geographical or time series trends;

There are essentially two types of health management information systems:

1) Facility-based: health management information systems: is a system of generating information originating from health facilities such as hospitals, health centres and dispensaries, private clinics and nursing homes, mission hospitals and other NGO health activities. This source of information is limited in scope since it only covers a special group consisting of health care seeking clients who are to visit or pay for the services. It excludes all those members of the population who are poor or without access to care. It also fails to monitor those illness
conditions that are either mild or too culturally stigmatised to be reported at the health facilities. Such conditions include mild diarrhoea in children, STDs, leprosy, TB and epilepsy to mention but a few.

2) Community-based health management information system: is a system that generates information through sources at the community level. Such a source is comprehensive since it covers all those who need particular health care or all who suffer from a given condition in the population. This source of information is complete in coverage and planning- and action-oriented at the community level. It is the only source of information for mild conditions as well as stigmatised illnesses amongst communities that are culturally sensitive to those conditions. For example, leprosy and epilepsy may be considered punishment for past wrong-doing and their reporting in hospitals is then limited. Families with such cases do not report them to the authorities.

Monitoring and evaluation of PHC programmes aims at making health activities more relevant, efficient and effective. The purpose is to improve programmes and the health care infrastructure in order to guide the allocation of resources. To achieve these goals, monitoring should be a continuous process. Evaluations should be planned at the designing stage of a PHC project. The global efforts in development of efficient health management information systems and the increased application of microcomputers in data processing has made this a reality (AFR-KU, 1988).

There should be a good information base for PHC managers’ monitoring and evaluation. A good health management information system (HMIS) is a prerequisite for sound planning. The following are some of the characteristics of a good management information system:

- Information should be accurate, reliable, and up-to-date;
- Data should be easy to collect, analyse and interpret;
- The information collected should be useful to the person who is collecting it and the beneficiary community;
- Exchange of information between the community and the other levels is very essential. The feedback of information should be regular in order to minimise the loss of information which is common in systems where reporting to the higher levels is often a one-way communication flow;
- Even though the evaluation of PHC programmes is complicated, efforts should be made to assess the impact of such programmes on the health status. In such evaluations, the existence of baseline data is of great value.

There are five levels of information in HMIS. These are at:

1) Household level
2) Community level
3) Location/Divisional level
4) District level
5) National level

The household is the basic unit from which almost all information originates. Information on basic needs such as water, food, etc. can be collected by the household itself. A household could also keep a record of vital events, i.e. births, deaths and marriages as well as ages and sexes of household members, immunizations, growth monitoring and ante-natal care.

At the community level, the relevant information can be collected by the CHV, the village health committee and also by the PHC programme. The information to be collected may include:

- The target population for the CBHC programme;
- Environmental data (water, sanitation), e.g. number of latrines in use;
- Disease incidence;
Utilization of family planning services;
Immunizations among children;
Growth in children;
Traditional cultural practices affecting health.

In order to evaluate the impact of a CBHC project/programme over time, a baseline survey should be undertaken to provide the necessary information. Community health workers are also engaged in collecting data regarding their activities such as treatment of common conditions, growth monitoring and environmental conditions. Whenever possible, the community should be involved in the analysis and interpretation of the data. Rapid feedback of information to the community is essential.

Data collected from various communities within the Location or Division can be compiled by a joint team from the community and health workers and the summaries reported to the higher level. The data to be collected are the same as those collected at the community level. The summaries facilitate comparison of results and efforts of different communities.

At the district and national levels, a few indicators of health behaviour and health status should be compiled. The use of census data will also be encouraged. At the national level, the team responsible for PHC should monitor progress using district reports and periodic surveys. The indicators to be developed should be standardised by district to help comparisons within and between districts. At the national level, use should be made of four groups of indicators (WHO, 1981):

1) Health policy indicators:
   • proportion of national (health) budget allocated to PHC
2) Social and economic indicators:
   • adult literacy rate;
   • rate of population growth
3) Indicators of provision of health care:
   • coverage of safe water supply;
   • immunization: numbers and coverage;
   • health facilities: numbers, resources, service output
4) Basic health status indicators:
   • nutritional status;
   • mortality;
   • morbidity

The Role of Epidemiology in Health Care Planning

Epidemiology is defined as "the study of the distribution of disease and disability in populations and of the factors which influence that distribution". An epidemiologist is not only concerned with monitoring and evaluation of existing services, but is also interested in the planning process in its entirety, including the assessment of needs, the formulation of and choice between alternative policies and objectives; with formulation, design of experimental services, implementation, and development of definitive ones.

Epidemiology is concerned with health and sickness in populations and groups. This is because these phenomena exhibit certain features and certain types of behaviour which can be expressed only in population terms, and whose study may lead to means of control or to more effective care. The epidemiologist achieves these tasks through use of:

• Prevalence and incidence rates;
• Statistical measures and graphs;
• Models (causal and risk models).
The techniques and conceptual background of the epidemiological approach in planning varies greatly in emphasis according to the context of its application. Epidemiology is a problem-oriented discipline and the detailed approaches employed by its practitioners depend upon the problems with which they are faced.

Some of the kinds of problems that epidemiologists are confronted with are:

1) Situation analysis
The perception, formulation, and reformulation of health care needs is a continuous process that can only be achieved by a multidisciplinary team of economists, sociologists, politicians, clinicians, managers, epidemiologists and biostatisticians. The epidemiologist has to define and describe the causes and patterns of distribution of sickness, health status, and needs of the populations and the measures of the effectiveness of the services. In addition to describing and defining the populations, situation analyses based on epidemiological investigations are also useful in pointing the way to a series of alternative solutions rather than a unique proposal.

2) Priorities and objectives
Situation analyses are partial prerequisites in making decisions regarding health priorities. Priority decisions are based on both the pressures of the situation and an assessment of the feasibility of the alternative solutions. But questions on feasibility require that general objectives are resolved and elaborated into precise behaviourally-expressed components. Setting of priorities and the formulation of objectives are solidly linked in the planning cycle. They require judgement, knowledge, and wisdom, and an ability to synthesize numerous details in different dimensions: an indispensable role of epidemiology.

3) Decisions between alternatives
In choosing an alternative plan of action, a planner needs to conceive of the intended service as a system in order to analyse it, to forecast the way it will work, and to predict its outcomes. Epidemiologists can achieve this task using modelling techniques.

4) Implementation and monitoring
During implementation of programmes there is need to decide on the type of epidemiological indices and parameters to be used for gauging whether implementation is progressing as planned. That is the role of monitoring.

5) Extended monitoring and data collection

6) Evaluation

REFERENCES
INFORMATION FOR LOCAL HEALTH PLANNING: A REVIEW

INTRODUCTION

Health care planning and management in sub-Saharan Africa is highly centralised, and its information base is weak. It uses vital statistics, facility-based reports on self-selected patients and clients, population projections based mostly on official census figures, resource data such as expenditure, staff and equipment, and impressions from occasional supervision visits to accessible institutions. Such information provides a crude picture of the general illness pattern and an account of resources and service output at reporting facilities, but it is incomplete and partly inaccurate. It reflects problems of a relatively healthy urban minority with easy access to health institutions. This chapter examines a selection of published texts on health information and its improvement in support of district level planning in developing countries including eastern Africa.

An overview of health planning in developing countries has been published by Green (1994), and several. Third World country studies of health planning have been brought together by Akhtar (1991). Health information in support of health planning, with emphasis on PHC and examples from eastern Africa, has been reviewed by Boerma (1991). A prominent subject in these texts is decentralization, which depends on several factors, particularly: (1) access to locally generated health information, (2) fair local control over staff, budget and programming, and (3) well trained staff in charge. Various aspects of decentralization have been addressed by Rondinelli et al. (1989), Mills et al. (1990) and Collins and Green (1994). Intersectoral information issues have been summarised by De Kadt (1989).

Efforts to decentralise health planning and management to district and sub-district levels require improved local access to health-related information including more of population-based data and facts about local people’s views and priorities. An improved health information system (HIS) should reduce some of these weaknesses, but remain affordable within the overall sector resources, which in the poorest countries are very limited. When judging whether an improved HIS should include more of household interview surveys, focus group discussions or key informant interviews, it is important to consider not only the potential usefulness of such methods, but also their feasibility and their costs.

For most countries, traditional health indicators (infant mortality rate, maternal mortality, life expectancy and mortality), appear to have improved overall. However, important disparities appear when the analysis includes socio-cultural variables such as ethnicity, poverty, education; demographic variables such as sex, gender, migration; and epidemiological information such as health status, risk exposure, nutrition and incidence of specific illnesses (D’Souza, 1980; Fauveau et al., 1989). Socio-economic indicators have been proposed for example by Zurayk et al. (1987), by Cortivoss et al. (1993) and by Durkin et al. (1994).
Most HIS in southern Africa channel information almost exclusively from the periphery to the centre. It captures self-selected clients or patients seeking care at reporting facilities and it describes the clients and their reasons for seeking help, the likely main diagnosis and the service given. This information, compiled on different forms for different services like outpatient care, immunization, maternal care, family planning and drugs, provided, is mailed to the supervisor, while a copy is kept at the reporting facility.

THE ROUTINE REPORTING SYSTEM

Facility-based routine reporting, mostly monthly and focused on service output and resource use, is useful for monitoring facilities, moderately useful for programming and for formulation of annual workplans, but less satisfactory as a basis for strategic and long-term planning. It is a costly system, occupying a large proportion of total staff time at every reporting facility; it is likely that staff spend excessive proportions of their time on producing reports as the only performance evidence visible to superiors.

It is possible to restrict facility routine reporting considerably if requirements are limited to a service output report in narrative once every three months, plus an annual activity report by programme with an updated resource inventory (physical premises, vehicles, essential equipment, manpower). Feedback to reporting facilities, copied upwards, should be provided on every report. Other record-keeping and report production is needed only for local management and planning purposes, including demarcation of the actual catchment area of each facility. Outgoing reports should be disaggregated by age group and sex. Facility-based reports are forwarded up the system and tend to pile up at central level with little or no feedback comments to their primary source and only rarely prompting any form of analyses. Considerable hidden costs, estimated at up to one-quarter of the total recurrent costs of the services and mainly consisting of staff time, were incurred by this underutilised info system; it is against such expenditure that the costs of any revisions must be assessed.

HOUSEHOLD HEALTH SURVEYS

Surveys of a sample of households generate information on people who for various reasons are not seen at health facilities. District health planners would benefit from local data on issues like nutritional status in high-risk groups, morbidity and mortality in underserved areas and population subgroups, prevalence of chronic illness and permanent disability, pattern of injury, referral practices, quality of care and service outcome, surgery and its quality, mental ill-health and coping. Most of this can only be obtained with a household survey of some kind or other. An example of survey-based morbidity assessments has been published from Ghana (Ghana Health Assessment Project Team, 1981) and methods for quantifying the total and disease-specific burden of disease have been presented by Allen and Lee (1989), Murray (1994) and later discussed by Barker and Green (1996).

Accounts of past household health surveys have been given from Ghana by Belcher (1976), from Cameroon by Nchinda (1977), from Nigeria by Gesler (1979), from Bolivia by Ferrihas (1980), from Ecuador by Kroeger (1982), from Kenya by Oyoo et al. (1991) and from Ethiopia by Shomebo (1993). These surveys vary in size and focus. Survey costs were presented poorly if at all, however, and applicability in local health planning was not discussed. Household health survey methods have been reviewed for example by Bennett (1987), Kroeger (1983), Ross and Vaughan (1986), Nordberg (1988), Ferrihas (1991), and Bennett et al. (1993). A special case of household health interviews is the "verbal autopsy," or the post-mortem interview with family members to determine the likely cause of a recent death at home (Mynttinen 1991; Snow and Marsh 1992; Chandramohan et al., 1994). Home-based records have so far not been much used (Kumar 1988).
RAPID APPRAISAL METHODS

So-called rapid appraisal methods were advocated in the early 1980s by Chambers (1981) and have been examined in recent years by Smith (1989) and by Scrimshaw and Gleeson (1992). Delphi panel methodology and applications for exploring local views and forecasts have been presented by Turoff (1975), Delbecq et al. (1975), Masser and Foley (1987), and van Dijk (1990). Delphi methods can be adapted and applied at community level with the help of trusted local villages at relatively modest costs. Delphi methods have been used especially in technological forecasting and business administration, and applications including the health sector have been presented for example by Milhoolland et al. (1973), Lindeman (1975), Schoeman and Mahajan (1977) and Oranga and Nordberg (1993). A case for obtaining local community views through opinion polls has been presented by Al-Swaleem (1991).

Key informant interviews and focus group discussions are generally underutilised and relatively low-cost methods with considerable potential in local health planning and management (Kintzinger 1995; Khan et al. 1991). Local formal and informal leaders, managers and experts in sectors other than health, non-government organization representatives and spokespersons from community development action groups are all possible respondents in such fact-finding or evaluative exercises.

There is also a possibility to identify a few "sentinel" reporting facilities with special instructions and extra resources to generate more detailed data on a few variables of interest at central level (Andersson et al. 1989). Such data could for example include specifics on surgical procedures performed, lab tests done, drugs prescribed, the referral history of patients, treatment outcome and side effects, estimates of staff time inputs by programme, exit interviews on service quality, cash expenditure related to the visit, and so on.

DESCRIPTIVE ANALYSIS OF THE LOCAL HEALTH CARE SYSTEM

Every local manager needs a basic up-to-date description of the infrastructure and the activity programme under his or her responsibility: manpower, buildings, vehicles, equipment, budgetary resources, rules and regulations, management procedures. Updates may be continuous or occasional, and methods vary. Descriptive appraisal of the local health care infrastructure is useful for any manager attempting to plan and manage on the basis of a local problem analysis. Methods for describing health infrastructures in developing countries have been reviewed and proposed for instance by Amnico-Larsson et al. (1984), by Vaughan et al. (1985), by Smith et al. (1988), Annet et al. (1991) and Nordberg et al. (1993).

SOCIO-CULTURAL STUDIES

Socio-cultural health studies are helpful in harmonizing interventions to local levels of awareness, community perceptions and habits. They are becoming more common, but are difficult to implement with ordinary health sector staff, who are rarely trained in the appropriate methods. Staff serving in their area of origin are familiar with the local culture and have few problems with this, but others are less lucky. Full-scale anthropological studies and socio-cultural surveys require well trained staff and plenty of time. Rapid assessment ( appraisal) procedures (Chambers 1981) exist and are often adequate for the task at hand. However, reviews of methods have been published by Wood (1981), Stibbison-Hebert (1983), Smith (1989), Corell et al. (1989), Manderson and Auby (1992) and Scrimshaw and Gleeson (1992), Anker et al. (1993). Case studies have been presented for example by Dunn (1979) on parasitic disease control, Kendall et al. (1984) on rehydration therapy, Bentley et al. (1988) on diarrhoea case management, Scrimshaw and Hurtado (1987) on nutrition and by Satia et al. (1994).

Data for costing health interventions has been identified by Mach and Abel-Smith (1983) and the availability and use of economics information at facility and district level have been reviewed
by Waddington et al. (1988, 1989), Mills (1990) and Newbrander et al. (1994). Community financing of health care has been examined by Abel-Smith and Dua (1988). The association between health planning and budgeting has been addressed by Segall (1993) and data for monitoring and evaluation have been proposed for instance by Jayasuriya (1986) and Montoya-Aguilar (1986).

It is proposed to review the existing HIS to suit the decentralised management being developed for example in eastern Africa, but revisions must remain inexpensive. One is sex-disaggregation of client data to facilitate detection of sex- and gender-related variations. There is also need to prevent vertical service programmes from imposing their own, often donor-driven reporting systems poorly harmonised with the general HIS. Existing routine reporting system can be improved by:

- improving completeness of reporting;
- providing regular feedback from next higher level;
- sex-disaggregation of data at facility level and at least up to district level;
- establishing 10-20 sentinel reporting sites for detailed reporting on issues which change over time.

Surveys may supplement the routine reports but are cumbersome and require outside advice and/or support. A cross-sectional survey would be useful every 4-5 years, a longitudinal less often and a socio-cultural survey only occasionally. Costs can be controlled by reducing staff time spent on routine reporting and by involving local communities in survey implementation (WHO, 1991).

REFERENCES


HEALTH MANAGEMENT INFORMATION SYSTEMS: DESIGN, ORGANISATION, IMPLEMENTATION

ORGANISATION AND PROCEDURES OF HEALTH MANAGEMENT INFORMATION SYSTEMS

Organisation

By organisation of a health management information system is meant the way in which the office is systematically arranged to execute its functions. The functions of a health management information system are:

(a) To examine requests for health statistical information and to relate these to the national health planning objectives in order of priority;
(b) To collect, analyse, interpret and publish statistics pertaining to national health planning needs.

Apart from the government statistical offices at the district or higher level, there are other institutions that manage health information in a smaller context. These include:

1) Research organisations such as Kenya Medical Research Institute (KEMRI), and Kenya Trypanosomiasis Research Institute (KETRI);
2) Trade unions such as Central Organisation of Trade Unions;
3) Non-governmental organisations such as African Medical and Research Foundation (AMREF), Action Aid, and Committee of American Relief Everywhere (CARE);
4) Private companies such as East African Industries Ltd., Coca-Cola Ltd., Kenya Breweries Ltd., and Aspro-Nicholas Ltd.;
5) International agencies such as World Health Organisation (WHO) and UNICEF.

Usually these institutions are smaller and hence faced with less organisational problems than the large national statistical offices.

All the national statistical offices are engaged in activities all over the country. Now the question is whether these should concentrate all data processing operations in one location or to spread them in several other parts of the country, that is, should offices decentralise or centralise health management information offices?

Decentralisation

A health management information system is decentralised if the data collected are compiled by several branches of the same system located in different parts of the country. For example, we could process data at community levels, in the district or provincial offices instead of undertaking all such activities at the Headquarters.

Several factors favour decentralisation:
1) It is easier to secure cooperation of respondents with small units having autonomous administrative responsibilities;

2) Where data is needed for formulation of health policies relating to communities, districts or regions, a decentralised system is favoured because it would be able to collect the data in the most appropriate manner to suit its needs;

3) Data collection and processing is expensive in the case of a centralised system;

4) Much data is generated by the administration of health facilities. The collection of data is inseparable from the administrative functions and illustrates the need for decentralization.

Centralisation
The centralisation of health management information systems has several merits:

1) A centralised system allows integration of the statistical services so as to ensure the overall quality of data collected. Where data is collected on a large area, say district, the inter-district coordination might not be easy to obtain;

2) More efficient use of scarce resources like skilled manpower and expensive equipment. Further, a centralised office can achieve substantial economies in the overhead operations as in tabulations, computations, printing, and distributive services;

3) With a decentralised system, it is usually difficult for professional staff to learn from others in a different field, say epidemiology and demography. However, such flexibility is possible with a centralised system. Moreover, a centralised system benefits from the close association and mutual education amongst professional staff.

The organisational system depends on the distribution of the smaller units of a district or national HMIS office. Sometimes, a system could be organised according to subject matter or function. In organisation by subject, each branch or department of the national HMIS office is responsible for planning, collecting, processing, analysing, and publishing specialised statistics or specialised group of statistics, e.g., mortality statistics, morbidity statistics, or demographic statistics organised by subject. Functional organisation implies that each unit within the HMIS system would perform separate function, that is, one unit would be responsible for analysing demands and for planning of surveys, another would only be collecting data in the field, another would only be processing the collected data, for analysis and report writing. Organization by subject or function is an activity that is limited to facility-based HMIS cases.

Subject organisation is an original approach, suitable for countries where the volume of statistical activities is massive and which practice decentralised systems. With the introduction of computers, the functional approach has become more appropriate, allowing more specialisation and training of manpower for planning purposes.

Procedures
Collection and compilation of health management information at the district or higher levels can be based on two basic forms of procedures. These are:

1) Separate series
2) Standard systems
With separate series procedure, the information is collected, processed, analysed and published as and when there is demand for it. This procedure does not ensure consistency and comparability between results relating to the same subject matter. For example, suppose there is need for a survey of maternal mortality due to pregnancy, an investigation could be undertaken to secure the required information. However, the results would be compiled and published without conformity to any standards. This was the original approach in most organizations and its advantages are simplicity and ease. The major drawbacks are data inconsistency and incompleteness.
The standard systems procedure is based on a system in which statistically valid standards are set for classifications, concepts, definitions, etc. With this procedure, it is possible to fit most information on social and economic status into the framework of a statistical system. Two examples are the systems adopted by the International Classification of Diseases and Causes of Death and the International Standard Industrial Classification (ISIC). The standard systems procedure is the most modern and has been adopted the world over in place of the former. The standard systems approach is more appropriate in that it leads to completeness and consistency and produces statistics suitable for elaborate analysis of health programmes, projects and policies.

BACKGROUND AND CURRENT STATUS OF THE HEALTH MANAGEMENT INFORMATION SYSTEM IN KENYA

Health management information systems (HMIS) have been recognised as an integral part of a health systems infrastructure. It is through these systems that information will be shared among WHO member states and with WHO head office.

In Kenya, the idea of an HMIS was conceived in 1974 with the creation of a Vital Health Statistics Unit and later, in 1975, an Evaluation and Research unit. These two units were merged in 1980 to form the Health Information System (HIS).

In order to strengthen the Health Management Information Unit at all levels, Ministry of Health, in collaboration with USAID, initiates the Health Planning and Information Project (HPF) in 1983 and later, in 1987, the Information and Planning Systems Project (IPS).

The functions of the HIS Unit were:

- Collection, processing and analysis of health and management (administrative) data;
- Improvement of the quality of health data, review and modify, where necessary, the reporting systems to enhance the utilization of data by end-users;
- Assist in the training of health personnel in medical record keeping and programme evaluation techniques and;
- Dissemination of health information to end-users within the Ministry and other relevant organizations.

Current Status Data Collection

There are basically two data collection methods:

(i) Ad hoc surveys;

(ii) Routine surveys

The decision on methods to adopt at a given time will depend on the type, frequency and nature of data to be collected. In facility-based health management information system of the Ministry of Health, routine data is collected from health facilities using standardised forms at times depending on demand, ad hoc data is also collected whenever there is need through specific survey, e.g. of disabled persons.

Methods commonly used include: (1) use of schedules or questionnaires; (2) interviewing; (3) observation. Although observation is not popular, it has been much used in medical anthropology.

Information Flow

An effective information system provides the required information at all the functional levels of demand at the right time for the relevant decision-making and is accessible to all beneficiaries promptly. For facility-based HMIS, the lowest level of data collection point is the health facility, i.e. hospital, dispensary or NGO clinic. For community-based health management information systems, the community is the target since PHC activities are initiated at that level. The flow of
Facility-based Health Management Information System

The Ministry of Health operates a variety of health management information systems. These systems lack integration, and are disjointed and widely dispersed, with no effective coordination to ensure that the information is readily available to users. The systems are highly localised and thus are often inaccessible.

Presently, Ministry of Health has no reliable, accurate, standardised information systems for most of its information requirements in key areas such as personnel management, planning and budgeting, and evaluating and monitoring the performance of its resources (e.g. manpower, physical resources such as equipment and machineries). Most of the information coming from health facilities only provide limited information on the number of employees and equipment on-site without indication of their precise physical location, their market value or salaries, or working status to mention but a few. This is complicated by the frequent shifting of employees and equipment from one physical location to another by the Ministry.

There is urgent need for the Ministry of Health to set up a modern information system capable of providing data necessary for planning and management, monitoring and evaluation of the sectoral activities. Presently the HMIS Unit is engaged in standardising data reporting procedures in provincial hospitals with a slow operational progress. As a minimum, Ministry of Health requires a system that is capable of providing information on:

- Staffing levels and productivity;
- Staffing budgets;
- Payroll listings;
- Practical staffing norms on which to base day-to-day deployment decisions as well as for career development and recruiting efforts;
- Definition of facilities by type (services offered, physical structures, staffing norms, catchment population, number of beds);
- Financial management and accounting information (revenue received, expenditures incurred, etc.);
- Workload and operational information (routine, regular workload and operational statistics, number and types of patients, procedures, diagnoses, etc.);

While the Ministry has no functional system for generating information on manpower, it has in place a functioning financial management system based on the accounting principles mandated by the Ministry of Finance. Hence the system only serves the defined set of needs for reporting and compliance with Treasury and does not interact readily with operational, clinical, inventory, or planning data from the computerised systems to facilitate planning and decision-making.

Presently, information on workload and operations are compiled at most quarterly and are often only annually. Reporting rates from facilities are low and the Ministry of Health headquarters does not have complete data for all facilities for any one year. Furthermore, those workload data that are compiled are often derived from morbidity and mortality statistics with no valid cross reference with medical records, residence of the patient, public health survey data, etc. There are chances of the information being susceptible to transcription and arithmetic errors due to the high volume of information and lack of computer facilities.
In order to develop and sustain an efficient system, all these management information systems must be operationalised at all levels of the health system. This is the main task that the HMIS Unit must address itself to. In order to consolidate and strengthen key health management information systems that support the policy-making role of the Ministry in budgeting, planning and management functions, it is envisaged that the system so developed should:

- Identify all the fixed assets and provide accurate and timely information. This calls for creation of routine and continuous updating of a facility information system which would capture details of each and every health facility in Kenya - government, private and mission facilities. The system should be able to capture information on medical and non-medical equipment and vehicles;
- Provide data needed for generation of meaningful financial management and cost control information. In addition, the system should provide data needed to support the development of financial planning models of the Kenyan health care system. The availability of budgets and standard costs is essential in the establishment of an effective control system and financial models. Standardised costs are useful for performance measurement, for pricing, services, and for use in planning models to help evaluate the costs of adding, expanding, or changing services and programmes within the health care system;
- Generate accurate and pertinent operational and workload needed for developing health care plans and budgets, and for support to management decision-making;
- Provide information on manpower for effective manpower planning and management.

Community-based Health Management Information Systems

The current status of community-based health management information systems is worse than facility-based systems described above. Ministry of Health is still struggling to strengthen its facility-based health management information systems, a pre-occupation that has tended to overshadow the development of community-based health management information systems.

There are many ad hoc studies that have generated useful community-based health management information undertaken by various organisations (government, NGOs, private, etc.) in Kenya. However, all these studies are not interactive and integrated to form an efficient system. Lack of standardised methodology and procedures, information originating from such studies are scattered and cannot be compiled at all the levels (family, community, location/division, district, and nation).

The only systematic and standardised approach attempted so far made in developing an effective community-based health management information has been undertaken by the African Medical and Research Foundation (AMREF). The "Integrated District Diagnosis and Health Planning" (Kenya) project, implemented between 1989 and 1992 in Kilwezi Division, Makuene District, (formerly Machakos) Kenya addressed the health management information issue with current resource constraints as an important consideration. The findings of the study culminated in the development of low-cost, sustainable community-based systems applicable in rural communities as in Africa. The HMIS models so developed are also being tested on a pilot scale in the same area through a project funded by the same donor, the International Development Research Centre (IDRC) of Canada. The results of this implementation phase is expected to be available by the end of 1997. Ministry of Health has seconded its staff members to be trained on the job in order to replicate the findings of this phase of the project in the other parts of the country in future. This shows the degree of commitment by the Government to ensure its success. This is the only comprehensive alternative to initiate and establish an effective community-based health management information system in the country.
The Five-Wheel Model for Kenya's proposed health management information system
Kenya's proposed HMIS model is based on five components reflecting on the different collection and processing levels. These different levels are:
(1) Community
(2) Facility
(3) District
(4) Province
(5) National
Because of its five levels of processing, the HMIS is commonly referred to as the Five-Wheel Model.
With the Model, data is basically to be collected from both community-based and facility-based sources. The feedforward system of information flow is that the facility-based and community-based health management information so obtained from various sources are processed and summarised for the whole district. Data from the different districts are then compiled to form provincial summaries. Then finally, data relating to the various provinces are compiled for the whole country at the national level.
The feedback flow engages the same channels in sending back responses from the national level to the community and facility with regard to any interventions to be adopted. Horizontally, there are several players involved in the processing of the data at the same level. Hence the system is expected to enhance efficient information at each level (wheel) of the Model.
As already indicated elsewhere, the establishment of the whole Model is still at the infancy stage.

IMPLEMENTATION
In this time of declining per capita resource allocation to the health sector, it is unlikely that the health system will be able to expand its planning and monitoring capacity. It is therefore important that communities take a larger role in planning, implementation and monitoring of their own primary health care (PHC) services. Thus the involvement of local communities in the generation of health information is necessary. Participatory community-based health management information systems also help communities reduce dependency on the health system to identify their needs, set their priorities and monitor progress.
Participatory methods are associated more with community-based than with facility-based HMIS. Health management information is required by managers in order to make informed decisions during planning, implementation, monitoring and evaluation phases of projects and programmes. An effective PHC manager must be aware of the changing health conditions, coverage of health services, utilization of services and the amount and quality of resources (human, physical and financial) available to meet the objectives of the programme. PHC is based on a central strategy of community participation, including participation in the planning, implementation and monitoring, and evaluation of PHC services.
A community-based health management information system should engage a combination of people, equipment and data collection and processing methods that are available locally within the resource-constrained environments of rural communities in developing countries. The system should be coordinated to produce useful information needed for planning and management of PHC and healthcare delivery systems. The participatory approach invites the involvement of communities who are the intended users, in the study design, implementation and evaluation, and this increases the likelihood of acceptance and use of the system's output. Therefore, questions to be addressed when developing a community-based participatory HMIS should include: Who plans the project activities? Who is the community? What is the involvement of the poor, less educated and women in the participation? Who influences the next phases in the process?
Participatory approach involves communities occurring at three levels:
(i) Utilization of the services and facilities provided by the project;
(ii) Cooperation with the initiatives planned by an outside agency;
(iii) Involvement in planning and managing activities.

While utilization is not considered in itself as true participation but rather a precondition, involvement is the highest form of participation and is usually what is meant by community participation. However, without utilization, further participation is unlikely to occur. Most participatory projects are of the cooperation type. While facility-based health information systems solicit the cooperation of communities, the community-based HMIS requires community involvement.

The success of community participation depends on several attributes related to the community concerned. In past studies conducted in Latin America (PAHO 1984), the following characteristics of the community were found to influence the level and extent of its participation: geographical distribution (urban vs. rural); how it was formed and developed; openness to change; a strong sense of social cohesion dictated by the degree of cultural heterogeneity; a high level of education; spatial concentration of the community; adequate communication and transportation facilities; presence of dynamic and enthusiastic leadership; community consciousness of its rights and responsibilities with regard to development; prevailing attitudes towards local community practices (e.g. traditional beliefs and practices). The conceptual framework for community participation (CP) helps to structure a systematic analysis of projects in three dimensions:

1. Mechanism/mode, i.e. the channels or structures through which CP occurs and how it occurs (individuals or organised groups, informal or formal, spontaneous or requested/imposed from outside);
2. Breadth of CP, i.e. who participates (leaders, elites, women, minorities, youth)? How many? Continuous or sporadic?
3. Areas of CP: (a) planning (b) implementation, (c) monitoring and evaluation, including formal and informal ways of expressing community opinions regarding health activities.

Studies have revealed that formally organised mechanisms appear to be more effective channels for CP than informal ones since they tend to be more lasting and conducive to group action. Further, the more closely linked to the community the mechanism is, the more likely the effectiveness in promoting participation. If a programme's aims include community involvement, responsibility and widespread behavioural change, very broad participation by a large proportion of important community groups will be necessary.

METHODOLOGY
The Sampling Design
The establishment of a community-based health management information system comprises the following:
1. The Sampling Design;
2. The Questionnaire Design;
3. The Operating Design;
Sampling Design stage normally has numerous constraints and limiting factors that must be carefully addressed. These are issues related to availability or lack of complete, accurate and precise lists of households to be used as sampling frames in cases where probability sampling design could be comparatively more powerful. Therefore, a good sampling frame must be identified. Where there is no sampling frame, an alternative sampling plan must be sought. The team must ensure that the techniques being adopted are scientifically sound and in conformity
with the socio-economics of the communities concerned.

Developing countries are characterised by lack of adequate sampling frames and serious resource limitations. There are few skilled manpower to be engaged in planning and implement-
tion of an HMIS, as well as in areas of data processing and analysis especially with regard to
beneficiary communities. Although computers are nowadays available in many countries, the
rural communities are yet to experience accessibility to such modern computer technologies.
Although there are no ready sampling frames in many developing countries, these can be
compiled locally with the help of village elders and local administration. It usually takes about
one week to two weeks to compile such a list at the village level. However, completeness and accuracy
of such lists are questionable. In spite of these limitations, lists of administrative units are
generally available. Hence, the most efficient method of sampling in developing countries uses
the cluster sampling plan. Based on the known list of administrative units a sample of say,vs
villages can then be randomly selected as HMIS operational areas. Then, if resources permit, all
households within the selected villages would then be used to generate the required
information thus applying a cluster sampling plan. However, because of limitations of resources,
many communities are still poor and cannot afford to cover all the households in single villages.
It is more appropriate to include more clusters with few sampled units that cover few clusters
with many within-cluster units. Thus if resources are limited, then a multi-stage design would
be more appropriate. At times when there is need for information by some characteristics, say
males and females, separately, then stratification can be introduced within the cluster or multi-
stage sampling plan as appropriate.

There are occasions when information is required for smaller units only such as mountainous
area or river valley is a community, but there is no sampling frame, then a systematic sample
should be adopted. This design has been used a lot in urban clusters where housing units are
organised in rows rendering the situation acceptable to the modes of conduct of systematic
sampling.

In low-income countries, most members in communities are illiterate or have attained
minimum basic education, yet most countries are dependent on foreign languages like English as
means of communication through questionnaires. Hence since data collection activities involve
local community interviewers, the questionnaires should be translated into the local vernacular
language so that each interviewer should carry a copy for reference during field activities.
In addition, because of the low level of education, the interviewers should be provided with a
vernacular translation of a detailed set of instructions to be followed while alone in the field.

For any sampling design, the optimum sample size, \( n_{opt} \) is given by the formula:

\[
\text{\( n_{opt} = \frac{(1.96)^2 p(1-p) \cdot D^2}{d^2} \)}
\]

where \( p \) = proportion of individuals with a given characteristic, say persons suffering from
tuberculosis of the lungs in the community; \( D \) is the maximum error that can be allowed and \( D \)
is the design effect for the selected sampling design. For the purposes of mortality estimates, an
increasing sample size by a factor of 2 compared to a simple random sampling design will serve
for most cases when calculating the size for a cluster sample, i.e. the design effect for a cluster
sample is 2 (Rothenberg 1985; Dowd 1996).

In practice, because of resource constraints in most communities, the optimum sample size
is hardly obtained in community-based health management information systems. However, it is
essential that the optimum sample size be calculated in order to be able to assess the extent of the
shortfall inherent in the precision of the resulting sample estimates. In order to determine the
actual level of the estimates for a given adopted sample size, that is \( d \), the formula below could
be used. That is, the actual precision of the estimates is the positive square root in the equation:

\[
\text{\( d = 1.96 \sqrt{\frac{n}{n(1-p)D^2}} \)}
\]
The Questionnaire Design
This stage of the implementation is mainly concerned with testing the adequacy of the survey instruments such as questionnaires and schedules developed for data collection exercise. It is also important at this stage to know how communities will react to the questions to be asked. All these can be achieved through the so-called pilot survey. A pilot survey will also assist in the determination of costs and errors associated with the sampling plans that are applied.

Conducting a pilot survey is essential and necessary in HMS activities. Although it is an additional cost to the project, it is worth it. During the pilot survey, each interviewer and supervisor should conduct at least one interview. Experience has revealed that with community-based health management information systems, a pilot survey should not cover the same respondents to be interviewed in the HMS proper. It is recommended that such a study should be carried in an area not falling within the selected clusters in the main survey. This is necessary in order to eliminate complications that could arise when some respondents are covered again in both pilot and main surveys.

The information so generated by the pilot survey should be used to re-train the supervisors and interviewers especially those that were difficult to understand well. It is after such a process that the final questionnaire shall be prepared.

The Operating Design
The Operating Design stage shall include the following activities:
- Community mobilisation and sensitization;
- Identification of community health management information needs and priority settings;
- Definition of the goals, purpose and objectives of the HMS;
- Appraisal and allocation of local resources to the system;
- Harmonisation of implementation with Ministry of Health (MOH) System;
- Data collection;
- Data analysis;
- Management and supportive supervision of the system;
- Information dissemination and feedback systems;
- Use and storage of information generated.

Community Mobilisation and Sensitization
Community mobilisation should be conducted through public meetings, seminars and workshops facilitated by community leaders in the villages. Local administration officials (chiefs and their assistants) and councillors should also be asked to inform and mobilise the respective communities on the HMS by enlightening them on the goals, objectives and coverage, including the anticipated benefits of the HMS.

Identification of Community Health Information Needs and Priority Settings
The merits of a participatory community-based HMS are based on a number of hypotheses. People are more likely to take action on decisions which they have made themselves. Since community members have a broad image of their environment, their involvement (community) will enhance their capability of conducting rational primary health care planning and management. Further, CP will improve the awareness of the local health situation and the likely effects of various interventions, and improve its willingness to initiate relevant health development activities.

A first step in establishing the system could be brain-storming discussion between parties involved, i.e. project implementors, extension workers and selected community leaders. This would involve sharing experiences and problems related to the aims of the HMS. Communities
are capable of assessing their own situation, evaluating options and opportunities and choosing the right course of action. However, they require the external support of professionals to facilitate the evaluation process. Participatory qualitative research techniques such as Participatory Rural Appraisal (PRA) and Rapid Rural Appraisal (RRA) methodologies involving the project implementing agencies, extension workers and members of the community should be used. The two approaches are often used to determine the needs and priorities of a community with regard to health (Ramakrishna, 1993). The community at large should be consulted now and then through key informants, focus groups and public meetings on issues related to the system as the implementation progresses and should also be involved in the project work itself. In addition, household interview baseline surveys could occasionally and sparingly be used for collecting the needed information. Other qualitative group methods such as Delphi panels and nominal group techniques (NGT) could also be applied.

Definition of the Goals, Purpose and Objectives of the HMIS
Once the informative needs and priorities of the beneficiary communities have been determined, then the HMIS team have to:

- Clearly define the goals, purpose and objectives of the HMIS exercise to satisfy the identified needs and priorities of the target communities;
- Identify the information to be collected to meet the stated objectives;
- Prepare a precise description of the target population, the statistical unit to base selection of the sample, the eligible respondents, as well as measures of precision required;
- Planning for the resources (human, physical and financial) needed for the preparation and implementation of the actual HMIS operations. The planning should address the issues to do with logistics, public relations, legal affairs, manpower requirements, organization of field activities, data preprocessing and report writing, and management of the HMIS operations. The effectiveness of the activities at this phase will very much determine the success of the HMIS.

Appraisal and Allocation of Local Resources to the System
In order to put up a system, resources (human, financial and supplies) are expended. A community-based HMIS must be planned on the basis of locally available resources. Therefore after identifying the types and volume of information required, the question is what resources are needed and/or available locally for the implementation. The qualitative methods of PRA and RRA are again very helpful at this stage and are therefore recommended. Nomination of the interviewers should be done by all members of the community at a public meeting while under professional guidance from HMIS specialists. Given that the role of community interviewers shall be voluntary, the nominated candidates must agree to serve their respective communities without expecting any remuneration or direct incentives. Interviewers should be selected from members of the community within the village within the village possible. The selection of interviewers from within the cluster has several advantages, namely:

- Promotes a sustainable and community-friendly systems;
- Ensures lower cost of implementation;
- More convenient to the work of the interviewer since he/she is at home;
- Improves the friendliness and working relationship between interviewers, supervisors and the community;
- Accelerated interaction and information feedback within the cluster;
- Fosters interest of the key players in the system;
- Encourages more use of the information collected;
- Establishes the sense of ownership of the system by the community.
The selected interviewers and their supervisors must be trained before deployment to implement the system. They should be given orientation and be taught how to conduct household interview surveys and how to use the information collected. In particular, the areas to be taught should at least include:

i) How to approach a respondent;
ii) Ways of enhancing public relations and rapport with the respondents;
iii) How to conduct a successful interview;
iv) Techniques of minimising non-response rates.

The whole duration of the training of supervisors usually takes 2 - 3 days, while that of interviewers from 3 - 5 days. For every HMIS instrument and techniques to be introduced, there must be re-training and exposure to a field pre-testing exercise before being left on their own. Every interviewer should conduct at least one interview during the pre-testing exercise. In order to promote smooth supervision and system efficiency, interviewers should be trained regularly, probably at intervals of two years. Some findings have shown that mere re-training of health workers like Community Health Workers (CHWs) is all that is needed for sustainability and reduced attrition rate, rather than direct incentives like salaries and allowances.

There are some methods of data collection such as the Delphi technique, focus group discussions and informal interviews with key informants which cannot be handled by the interviewers as these are beyond their capabilities. Their supervisors, that is, health workers at the nearest health facilities should be trained so that they facilitate the implementation.

Harmonisation of Implementation with Ministry of Health System

There are two types of health management information systems, namely facility-and community-based HMIS, and there is need to harmonise the two in order for each one of them to supplement the other. In order to understand the structure and functioning of the Ministry of Health (MOH) system, a descriptive study should be undertaken by interviewing key informants and policy-makers of the Ministry’s health system. The descriptive study can only be implemented by the health personnel at the local health facilities. The descriptive study provides relevant information with regard to highlighting the prevailing health system and those points at which the community-based HMIS would enhance the existing system.

Given that any community-based system is supposed to support the facility-based source, compliance with the MOH is mandatory and important for the long-term sustainability of the system. For such a system, the local health workers at the facilities should be placed so that the information generated passes through them for any referral and prompt action that may be necessary as in the case of epidemics outbreak. It is normal to engage the nurses and clinical officers in-charge of the nearest health centres and dispensaries as first-level supervisors of the community-based HMIS system. Eventually, all the data collected must be accessible to the same health workers in-charge before onward transmission to the higher levels of authority in the government. The harmonisation process is not costly.

Data Collection

Techniques and instruments for data collection are among the most important components of a community-based HMIS. The methods and questionnaires for data collection should be simple to understand, easy and cheap to implement and fast to analyse, comprehend and interpret. They should be capable of producing timely information without unnecessary cost bearing in mind the meagre financial and physical resources available within reach of these communities. Moreover, people in these communities are semi-literate and hence should not be loaded with complex statistical survey methods and bulky questionnaires. The number of questions included should be minimal and should only solicit the information identified by the community as their priority needs for local health care management and planning. Do not overload the questionnaire with questions aimed at collecting more data than necessary for such communities. The questions
should be simple, clear, precise and unambiguous. It is only then that valid, consistent and comparable information can be obtained.

Operational research studies have shown that longitudinal surveys should be avoided as much as possible in community-based HMDS. Longitudinal surveys are more complicated to design, implement and analyse. They require a fair amount of expertise and management capability and also active participation of communities. Further, longitudinal studies consume huge financial outlays of resources that are beyond financing capacity of such communities. Moreover, the methodology is characterised by a growing amount of respondent fatigue and frustration over time. Where the information is very much needed as is the case when monitoring health conditions and care-seeking behaviour, longitudinal surveys should be undertaken only at the district level, every 4-5 years and with a one-month interview recall period (Oranga and Nordberg 1992).

It is recommended that cross-sectional surveys be incorporated into the community-based HMDS and be repeated every 2 years. The cross-sectional surveys should be designed to solicit information on:

- Demographic characteristics
- Socio-economic conditions
- Nutrition and environmental factors
- Morbidity and mortality of chronic health conditions
- Disability conditions

Household interviews exploring illness episodes should ask probing questions on a small number of illness categories in order to overcome respondents’ memory loss and their inability to interpret reported symptom combinations. A list of 8–lo broad illness categories should be printed on the illness recall questionnaire in order to facilitate classification on the basis of experiences with reported symptoms. Based on flow charts, interviewers should be trained on how to identify such conditions.

The Delphi technique described extensively by Delbecq et al. (1975) and by Mueser and Foley (1977) is likely to reflect more of the truth regarding mild health episodes and conditions, which are not seen at health facilities for one reason or the other and do not, therefore, appear in facility-based morbidity statistics. There are good reasons to make selective use of the Delphi method, locally adapted, and to focus more upon otherwise hidden and poorly known issues such as chronic conditions, permanent disability, mental illness and socio-cultural factors associated with disease perception, self-care and care-seeking behaviour. The Delphi technique is cost-effective in developing countries (Oranga and Nordberg 1993). Collection of data by Delphi methods should be facilitated by local health workers with support from the district level professionals. A Delphi study could be conducted at the same frequency as cross-sectional surveys, that is, repeated about every two years.

If more detailed, quantitative information on the way local people perceive causes and management of different diseases and, if appropriate preventive and curative counter measures are required, then a small-scale socio-cultural study could be implemented. Even though the questionnaire and interview schedule could be fairly exhaustive thus providing adequate information, some of the health problems such as at health care-seeking behaviour, need ethnographic methods of data collection using focus group discussions, intercepts, informal interviews and participant observation. A combination of different methods would strengthen the validity of the data. As in the case of the Delphi technique, focus group discussions and informal interviews with key informants should be undertaken with the professional health workers.

Data Analysis

At the village level, interviewers and their supervisors should be trained on how to analyse part of the data in less detailed form (as totals, averages and associations). Information should mainly
be presented in the form of graphs, charts and pictograms. Important simple series of information should be identified and routinely analysed. Generally, data to be analysed at the village level should include simple frequency distributions on:

- Demographic patterns and profiles, e.g. number of births by age and sex;
- Morbidity, e.g. number of persons ill by type of illness, age and sex, types of disability;
- Mortality by age and sex;
- Nutrition by age and sex;
- Environmental health, i.e. water and sanitation;
- Immunization.

The rest of the data emanating from the system should be analysed at the divisional or higher levels.

Management and Supportive Supervision of the System

Management of community-based HMIS system should be under the Village Health Committee (VHC) whose composition should be decided by village members at a public meeting for the villages, irrespective of age, gender, legal, political or socio-economic status. Since over 90% of the rural population consists of women and they are the people who are confronted with a myriad of health problems, women should be proportionately selected into the VHCs. Because of their gender roles, most women are either too busy to take on additional roles or are illiterate. Hence a majority of the VHCs are run by men. The VHC becomes responsible for the management of the system but with facilitation from the health personnel in the division or district. Smooth and conducive supervision of the HIS can be achieved by:

- Incorporation of village elders (ex-officio members of VHCs) and respondents in keeping records/diaries of the days when visited by the interviewer;
- Ask the interviewees to programme and develop long-term plans of when it would be convenient for them to visit specific households. The roster should be kept by all the parties involved, i.e. interviewer, village elder, supervisor, respondent and the VHC Chairperson;
- Frequent visits to the community by MOH officials especially from the district level through the divisional structure;
- Follow-up of identified complicated cases of ill-health conditions needing referrals by the local health workers.

Supervisory activities should involve making field spot-checks by the immediate supervisors and members of the district level MOH to ensure that implementation is within an agreed plan. Internal consistency and completeness of information should be controlled through rigorous editing of completed questionnaires by supervisors, both in the field and office. Interviewers should forward completed questionnaires to their supervisors for scrutiny before analysis is done.

Information Dissemination and Feedback Systems

Every properly designed HMIS system must have well-defined and efficient channels of information dissemination and feedback systems. Given that consumers of the information are primarily community members, the majority of whom are semi-literate, the form and means of disseminating the information must be easy and simple to be understood. Simple frequency distributions, simple graphical and pictorial presentations are recommended for such an audience.

Throughout the implementation of an HMIS, a lot of information shall be generated. The generated information is often required for other intermediate interventions to be instituted. Hence a feedback system should be connected to all activities going on within the system. The
feedback system should be efficient and dynamic enough to monitor changes taking place at any given time and at the same time to revise the database promptly for future action to be taken.

Dissemination of the information must be carefully done, it is mandatory to ensure the confidentiality of the information relating to individual households. This must be given top priority, otherwise the households participating in the HMIS would decline to cooperate. According to most Statistical Acts, it is an offence to disclose in public any information relating to one or two individuals without their prior written consent. This means therefore that only summaries or totals involving at least three respondents could be disclosed for public consumption. Interviewers should therefore be made aware of this important legal requirement during their training.

In order for the information to reach many users, the dissemination should be carried out during public meetings; social and religious gatherings by women's groups and church should be alternative avenues. Wherever finances allow, seminars and workshops for community leaders should be organized. Establishment of community information resource centres is recommended. Community information resource centres should keep information relating to other sectors apart from health. At the community information resource centres, notice boards should be put in place and any relevant and routine information generated by the HMIS displayed for the general public. The more detailed information should be locked away.

Finally, it is important that information generated by the system is forwarded to the district level in order to solicit support and appropriate interventions by mobilizing the resources set aside for the activities in the district. The feedback system should send back views and responses from the higher levels through the same channels. This latter flow of information is most appropriate in the government system. It stimulates community participation.

Use and Storage of Information Generated

One central assumption related to community-based HMIS is that access to broader health management information will motivate and improve the ability and willingness of the community in analysing local health problems and formulating appropriate interventions. Further, proponents of community participation strongly believe that dependency on community contributions will enhance local community involvement in programme development and monitoring.

Members of the VHC should be trained in PCH management and the use of information generated by the system for their local health care planning and management. During the training, emphasis should be on the role of health information for general management (resources and HMIS), epidemiology, short and medium term planning and health programming.

LIMITATIONS OF COMMUNITY-BASED HEALTH MANAGEMENT INFORMATION SYSTEMS

The development and operation of community-based health management information systems is faced with several constraints and limitations. Some of the most formidable constraints include:

- Inadequacy of qualified and dedicated community volunteers to run the HMIS systems on a voluntary basis;
- Lack of incentives for interviewers and supervisors;
- Inadequate community financing of the information resource centres;
- Adverse impact of external social and economic forces are at times detrimental and negative to community participation in development projects;

32 Community-based Health Information Systems
Lack of medical backup for cases identified as seriously ill in the respondent households. It is unethical to be visiting a household for the sake of gathering the needed data, but fail to be seen to be assisting the critically ill persons encountered during routine sessions of the HMIS.

Difficulty in the harmonization of the HMIS so developed with the existing health systems, particularly in situations where the health systems are still centralized at the top.

REFERENCES


Ramesh J. A participatory approach to identifying the food and nutrition insecurity. Presented at the International Symposium on Participatory Research in Health Formation held at Liverpool School of Tropical Medicine, 17-21 September, 1993.

AN INTEGRATED COMMUNITY-BASED HEALTH MANAGEMENT INFORMATION SYSTEM: A KENYAN CASE STUDY

THE PROJECT

Background

Many project failures have been attributed to the fact that important project actors and partners were not fully involved in the project management process, including project planning. The early involvement of the community and local health workers in a participatory HMIS will help develop commitment to the project and facilitate project implementation.

It is technically and practically feasible to establish a participatory community-based HMIS in developing countries where the general population is resource-poor and less educated. The community must be involved right from the project conception stage and during the project planning phase. Although normally the conception of the research project takes place outside the community, however, it has to address itself to problems or needs related to the community at hand. A community-based HMIS must collect only the relevant information needed by the community for their own use and should avoid gathering too much unnecessary information which is not of immediate use. Hence it is mandatory that PRA be conducted at the initial stages of implementation in order to involve the community in identifying the information needs and priority settings as relevant and essential for local health care management and planning. The researchers should spend quite some time in inducing, educating and sensitizing the community on the goal and objectives of the project. It is also strongly recommended that group interviewing techniques such as focus groups, Delphi panels and Nominal Group Technique be incorporated into the systems. At all levels of implementation, a flexible and dynamic information feedback system also should be put in place in order to enhance efficient and timely use of the generated information as well as back-up to the management and supportive supervision of the system.

At the community level, local administrators and politicians (such as assistant chiefs, councillors and village elders), are more useful during the time of awareness creation, education and sensitization of the community than the senior administration officials and extension staff. The long-term sustenance of a participatory community-based HMIS is insured mainly by providing some incentives to the interviewers. Wherever possible, the HMIS should utilise the locally available resources and avoid too much dependence on external support. The idea of a community-based HMIS is feasible. The system should be operationally designed to be cheap, simple, easy to implement and replicable to other parts of a country.

Social service systems in eastern and southern Africa are currently going through a difficult time facing declining resources, rapid population growth, frequent crop failure due to environment degradation and below-average rainfall, and a high level of civil unrest accompanied by
large-scale migration within and between countries. It is very difficult, under these conditions, to maintain a fair socio-economic service level. A rational process of planning, programming, and resource allocation is increasingly important.

Primary health care development, decentralization of health service management to district and subdistrict levels, cost-sharing in the form of various user fees and service charges, and more active supervision and financial control are some of the remedial actions being tried. The decentralization effort has been particularly strong in Kenya, where a "district focus policy for rural development" was launched in 1984 (GOK 1984). District level health care management requires staff trained in management and planning methods, and relevant and accurate health management information available to the District Health Management Teams and also to managers of rural health facilities. This is underscored by the fact that in Kenya post-basic management training for district health personnel has been expanded in recent years. Management information systems are also being revised to strengthen health care management at district level.

Kenya’s existing health information system does not provide a good base for decentralized management from the district level down. Its inaccuracies and its incompleteness are serious, but improvements are possible by adding an element of population-based data to the existing routine reporting system, by obtaining a more systematic description of the existing health-related infrastructure and its performance, and by adopting interventions and control strategies to economic realities and the socio-cultural environment including local perceptions of disease concepts and cures. There are no expectations of self-educated health care administrators in the districts to embrace and apply new information overnight. Basic health planning and programming are in fact possible with a modest amount of information. But with an increasingly complex disease pattern associated with the ongoing epidemiological transition, with an extended economic recession, improved management training and further gradual decentralization in Kenya of decision-making authority, we predict a need of a slightly broader information base for district and division level management. While this need may be reasonably obvious, at least in a medium and long term time frame, it is less obvious how it is best met. Relevant lessons have been learnt from experiences with a local "community diagnosis" (Bennett 1979) and more recently the Commission for Health Research for Development (1990) expressed support for community-based data collection and local planning. What is proposed here may be viewed as carrying out a "district diagnosis" procedure, partly integrated into the existing health care system.

The project addressed that problem by testing a model. The project was in harmony with the ‘National Guidelines for the Implementation of Primary Health Care in Kenya’ which among others included the following (GOK 1981):

- Health needs/problems in the community;
- Availability of resources, both human and natural, in the community; e.g. their own knowledge, resource persons e.g. TBAs, traditional herbalists, local funds for appropriate technology;
- Availability and utilization of health facilities and services within the community and roles of extension workers;
- Structure and composition of the community in relation to sex, age, educational status, etc.;
- Monitoring and evaluation of health problems in the community;
- The most effective forms of communication.

It is difficult to predict the extent of a given community’s participation in a systematic effort to identify and quantify its health problems and to draw its own conclusions. To study this project over a period of time in several different communities was an intended action research element of this project. Further funding was needed to determine to what extent this will be possible, but some conclusions of this project were to be applied in the project area. They may also
Figure 2. Makuene District in Kenya.
Figure 3. Kibwezi Division in Kenya.
become helpful in developing sub-district level health planning and community-based primary health care beyond the project area.

The Integrated District Diagnosis and Health Planning (Kenya) Project well-known as 'IDD' was a three-year project implemented from 1989 to 1992 in Kilwezi Division (now split into three, i.e. Mabinu, Kilwezi and Mitto Andei) (Figure 3), Makseni District in Eastern Province Kenya (Figure 2). The project purpose was to test broadened, but low-cost community-oriented health information systems within the resource constraints prevalent in eastern Africa. It was a joint project implemented with the Ministry of Health, Government of Kenya.

A follow-up project entitled Community-based Health Information System (CBHIS) was later approved for funding by the International Development Research Centre (IDRC) for three years (1994-97). Its purpose was to facilitate the implementation of the IDD project's recommendations. The CBHIS Project is ongoing with communities and Ministry of Health (Government of Kenya) implementing, while AMREF is facilitating. There are positive signs that the systems can be sustained although no rigorous hard data is yet available to support this.

Goals and Objectives

The goal of this project was stated as follows: to help make health care in eastern Africa more in tune to the needs, by developing an improved, but affordable information system applicable to East African districts and thus facilitate a more decentralised process of planning, programming and resource allocation based on need.

The objectives were:

1) To develop and test appropriate low-cost methods for generating population-based health information at district level and below;
2) To compare and evaluate health information obtained from:
   a) Household health interview surveys;
   b) Health care delivery system descriptive study;
   c) A health related socio-cultural study;
   d) A Delphi-type panel study.
3) On the basis of the above, to develop a model for district level health information systems that could be implemented in Kenya and other countries if found useful and replicable.

The Project Area

The study area, Kilwezi Division, is located about 200 km from Nairobi on the Nairobi-Mombasa road. It is an area of about 3,400 sq km and 1979 Census put the population of the division at 98,980 within 21,552 households, suggesting a population density of about 29 persons per sq km. The current population, consisting mainly of the Kambe ethnic group is estimated at 180,000 by 1995.

Kilwezi is characterised by low and unreliable rainfall with an annual mean between 50-800 mm. The short rains, which are the most reliable, occur between October and December with the peak around November. The long rains occur around March-May. The mean annual temperature is about 14-18 degrees centigrade.

Although its dark volcanic soils are rich in nutrients, low rainfall hampers the agricultural output resulting in frequent crop failures. The crops include maize, beans, millet, sorghum, cow and pigeon peas, sweet potatoes and cassava. Cotton is the main cash crop. Vegetables and fruits are also grown especially by irrigation near Kiboko and Athi Rivers.

The vast arid lands support good ranching. Hence livestock production is popular. The main species kept are cattle, goats and sheep. Poultry and bee-keeping are also popular. Kilwezi Division has poor infrastructural facilities in transportation and communication. The poor roads impede access to basic services. It is therefore an area of socio-economic hardship and widespread poverty.
Project Components
The project comprised the following components:
1) A descriptive study of a typical division health care system;
2) Cross-sectional-plus-longitudinal household health interview surveys of a sample of the population;
3) A 'Delphi' type study of the relative seriousness and incidence of various illness conditions as perceived by a panel of selected knowledgeable individuals in the respective local communities.
4) A socio-cultural study of local health and illness concepts.

DESCRIPTIVE STUDY OF THE HEALTH CARE SYSTEM

Introduction
An accurate, up-to-date description of the structure and the functions of the health care system is important for managers at any level. Its most obvious need is related to day-to-day decision making, for instance concerning manpower deployment, land and buildings, equipment and supplies. It is also much needed for planning purposes: as a basis for development efforts and for monitoring change over time.

The descriptive study attempted at making a concise description of a typical divisional health care system in Kenya including health care facilities, manpower, equipment, supplies, recurrent resource consumption, programmatic activities, planning and management, service output, health management information system and health-related intersectoral links.

Literature Review
There is no evidence in the published literature of a generally agreed standard model for describing health care systems in developing countries. Reasonably comprehensive descriptive analyses are in fact hard to find.

It was pointed out 20 years ago by Gisk (1978) that "it is quite remarkable just how little is known in many ministries of health about the state of most of the nation's health facilities... the facilities about which the least of all is known are the smaller rural health centres and dispensaries." He presented the following summary check-list of data required for (national) health planning:
- economic and financial data, e.g. expenditure patterns in the public and private sectors;
- facilities, e.g. resources, service output, catchment area population;
- manpower, employment figures, training school output, migration.

Much of this information is useful for planning at district level, but some is not, and a large proportion of it is not immediately available, but would require a lot of effort to assemble and analyse.

In a book on district health care management in developing countries Amonoo-Lartson et al. (1986) mentioned "review of existing state of services" (p. 72) as the first phase in the planning process. They summarised "methods for finding out what is happening in the district", mentioning five main ways:

a) Make a checklist of information required for reasonable planning and delivery of health services bearing in mind the human, material and financial resources that will be needed. The information can be extracted from available health statistics and from knowledgeable persons both within and outside the community;

b) The second method is the use of existing data and records of health and health-related institutions in the district.
The report for the above project in fact corresponded to the ‘check-list’ mentioned above under (a) and (b), and the cross-sectional and longitudinal household surveys seem to correspond to (c).

Indicators for monitoring progress towards Health for All by the Year 2000 have been proposed by WHO (1981) and include, among others, organisational framework, resource allocation and coverage of service distribution, community involvement, rate of population increase, adult literacy rate, food availability, physical and economic service accessibility, quality of care, mortality rates, morbidity and disability. Only a few of these can be routinely monitored by health personnel in their respective areas and many indicators would require a series of surveys conducted within or outside the health sector.

A framework for analysis of health care systems in relation to PHC particularly at district level has been proposed by Vaughan et al. (1984). Their list of management and planning functions include the following (p. 24):

1) Political and administrative structures.
2) Components of the whole health care system.
3) Organisational structure of the Ministry of Health services.
4) Operational management responsibilities at the district level for the following functions:
   i) manpower
   ii) training
   iii) finance and budgeting
   iv) supplies, logistics and maintenance
   v) supervision
   vi) referrals
   vii) monitoring and evaluation
   viii) coordination with other health agencies
   ix) coordination with other government sectors
   x) community participation.
5) Policy and planning mechanisms at the district level for:
   i) policy formulation
   ii) broad programming
   iii) programme budgeting
   iv) detailed programming
   v) implementation
   vi) evaluation
   vii) health management information.

Various methods of ‘rapid appraisal’ of programmes and infrastructures have been presented since a first model was proposed by Chambers (1981). Many applications have been developed, and a recent contribution in a series of modules for assessment of health care needs, services and system in developing countries (Annett et al. 1991). There are seven modules: (1) background information (socio-cultural, economic and ecological conditions); (2) district health management and support systems (institutions, staff, training, maintenance system, supplies, health information, planning, budgeting and financing); (3) primary health care facility information (catchment area, range of services, staff, transport, supplies), health facility inventory (buildings, furniture, equipment, drugs) and health activity (activities, morbidity and mortality, strategies, staff knowledge); (4) health management information (hospital management, programmes, physical inventory, morbidity statistics, staff knowledge); (5) community participation and traditional health systems; (6) patterns of mortality (births and deaths, causes of death); (7) community and household information (community environment, household survey).
Methodology
The descriptive study of the Kibwezi division health care system combined different methods of obtaining information:

a) Self-administration by existing staff at the health facilities of a 15-page questionnaire;  
b) Structured interviews with selected staff;  
c) Review of health facilities’ reports and statistics.

The Study Questionnaire
Originally two different questionnaires were developed, one for hospitals and the other for health centre, dispensary and clinic study. The two questionnaires were pre-tested to determine their appropriateness in capturing the information considered to be the most useful and capable of describing typical Kenyan health facility functions or situation.

The hospital questionnaire was administered to the staff of Machakos District Hospital and Makindu Sub-district hospital. The research team explained in detail each of the forty one questions. Whatever was considered to be vague by the hospital staff was clarified and the research team took note of them. The questionnaire was left for several days for the hospital staff to fill. The research team made follow-up visits to the hospitals to obtain the completed pre-test questionnaires.

The questionnaire for health centres, dispensaries and clinics was pre-tested in three government, one private company and three private clinics. All pre-test questionnaires were returned, but this required repeated field visits on the part of the research team.

Completed questionnaires were collected and scrutinised by the research team and conclusions were drawn on questions to be omitted and on the format of the final questionnaire. A decision was to be made whether to have two separate questionnaires, one for hospitals and one for other clinics, or to combine the two into one.

Modifications were made and a final draft questionnaire produced for discussion. Only one questionnaire - the hospital one - was adopted. All questions which were in the Health Centre questionnaire were also included in the Hospital questionnaire.

The final questionnaire included questions on:

- Physical facilities (land, buildings, equipment);
- Manpower (number and training);
- Budget;
- Resource consumption e.g. drugs and other supplies;
- Work programme - weekly, monthly plans;
- Supervisory support provided and received;
- Curative service outputs: patients treated/operated new and repeat visits; referrals, etc.;
- Preventive care (health education, nutrition, environmental health, MCH-FF, immunisation and deliveries);
- Training activities;
- Working time allocation of different staff categories;
- Contacts with local community leaders and community groups;
- Decision-making authority: control of funds and staff;
- Freedom to develop new programmes and to abolish others—constraints, problems;
- Contacts with local administrative leaders, NGOs etc.

Data Collection
The questionnaire was distributed to 16 health facilities in Kibwezi Division and one hospital outside the Division. Machakos District hospital was included into the study, although it is
located outside the division, because of its role as the district referral centre. Therefore, 17 health facilities were registered into the study. Each facility was visited at least twice by the research team. On the first visit, the team explained what the integrated district diagnosis project was all about, including its objectives, how Kilwezi was selected and the role of facilities in the implementation of the project. The questionnaire was reviewed by the research team together with the health facility staff (usually the in-charge plus his/her other technical staff). Questions which appeared difficult were explained to the facility staff by the research team. Most facilities agreed that three days were required to complete the questionnaire. The research team therefore made a follow-up to each facility on the fourth day. Since it was not possible to cover all facilities on the fourth day, that some facilities were visited after four or five days.

On this follow-up visit, which was aimed at collecting completed questionnaires, questionnaires were reviewed and errors in recording data corrected. Reported basic service output statistics were also reconciled where differences were discovered with the record files maintained by the facility.

After repeat visits to the facilities, all questionnaires except from the three Sisters of Mercy facilities at Kambu, Makindu and Kilwezi were collected. This gave a response rate of 82 per cent (i.e., 14 facilities out of 17 including Machakos District Hospital).

Structured interviews with selected staff
The person in charge of each facility was interviewed. The interviews were structured, but allowed elaboration into related management issues, usually in a rather conversational atmosphere. The issues addressed were as follows:

- Comments regarding the appropriateness of the descriptive study questionnaire;
- Service implications of equipment inadequacies and supply—shortages reported;
- Local authorization to take management decisions;
- Contact with sectors other than health;
- Previous descriptions of local health problems and the health service system;
- Community involvement in local health development;
- Job satisfaction and main frustrations;
- Recommendations to improve local management and planning;
- The health information system;

The interview records were processed manually.

Review of health facilities reports and statistics
The person in charge of each facility was interviewed regarding documents kept at facility level and regarding ongoing reports to district level above. A semi-structured questionnaire was used and the notes were processed manually.

Findings
The usefulness of the descriptive analysis for local management and planning remains to be tested by staff in charge of the health facilities and by the District Medical Officer and his team. The impression is that most officers in charge of rural health facilities are generally accustomed to receiving and implementing instructions from superiors rather than developing disease control strategies and programme combinations based on locally generated information and consultations. Implementation of a descriptive study with the modifications proposed above and programming the actual use of the data, will probably increase only slowly. This partly depends on what authority is delegated to local staff to manage and plan within the context of the local development process. The rate of improvement is likely to be slow, but rewarding, as regards local relevance and resource utilization. We are, therefore, not surprised that some staff
were slow in completing the questionnaire—probably due to more pressing tasks—and it takes considerable determination and time to analyse the data and prepare a final plan. An exercise of this kind should hardly be undertaken more than once every 3 - 5 years. It should be restricted to a 15-25% sample of institutions when conducted in an entire district, and the District Medical Officer should be involved in planning and launching the study. The questionnaire needs to be revised on many points as suggested in the text, and possibly expanded in a few areas such as resource use and community involvement.

Conclusions
The descriptive study required more time and effort than anticipated. Even basic information regarding resources, output and activities is not easily available. The questionnaire was generally appropriate even though the use of one questionnaire for all facilities meant that many questions were not applicable to small clinics and dispensaries. Even if respondents in charge of health facilities are given detailed instructions, they should be allowed several weeks to complete the questionnaire. Even then, follow-up visits to some facilities are likely to be necessary.

The size and composition of the catchment area population of each facility needs to be more systematically described and a widely acceptable definition of the concept is a first important step. A study comparing the results of different definitions applied to the same institution would be helpful to this process.

Records kept at facilities on service output are unsatisfactory, particularly with regard to quality of care. This also applies to resource use, but ongoing efforts by Ministry of Health to develop an improved management information system (MIS) may remedy some of these problems. More systematic supervision visits and a fair minimum of information feedback are likely remedies along with further decentralization of management authority. The absence in Kenya of institution-specific recurrent budgets and expenditure records is a serious drawback, and it is almost impossible at present to determine the actual recurrent expenditure pattern of singular institutions with the possible exception of some district hospitals.

The usefulness of the descriptive analysis remains to be tested by staff in charge of health facilities and by the District Medical Officer and his team. Our assumption, based on our own experience from rural health care management in Africa, is that it is likely to be helpful in both short and medium-term planning and in day to day management at district and subdistrict levels, but data need to be quite detailed. The process is rather time-consuming and it takes considerable determination to analyse the data and prepare a report. An exercise of this kind should only be undertaken once every 3 - 5 years, it could well be restricted to a 15-25% sample of institutions when conducted in an entire district, and the District Medical Officer should be involved in planning and launching the study.

CROSS-SECTIONAL HOUSEHOLD HEALTH SURVEYS
Introduction
Within the framework of the project objectives, three household health surveys, namely Cross-sectional Survey I and II and the Longitudinal Survey, were implemented. The cross-sectional surveys were designed to provide information on the demographic characteristics, socio-economic conditions, nutrition, environmental factors, prevalence of chronic health problems and disability conditions in each sample household. One was conducted in December 1990 and the other in December 1991.

Methodology
Sampling
In view of the expected incidence of different categories of illness and prevalence of disability and chronic conditions, based upon previous surveys in eastern Africa and the published literature
on sample size determination, it was calculated that the household health surveys in the project needed a total sample of at least 300 households or 1500 individuals. For reasons of replicability and cost, a multi-stage sampling approach with most clusters located in the close vicinity of existing health centres and dispensaries were expected to collaborate in implementation. To detect and measure the possible socio-economic bias associated with this sampling design, two 'control' clusters (Ivingoni and Musingini Villages) located far away from any existing facility were included. In order to minimise any inconveniences to the local health facilities, the question of cluster size was carefully considered. It was considered possible for a health institution to supervise more than 50-100 monthly household visits/interviews without interfering with their normal prime service functions.

Although it may be difficult but not impossible for a hospital or health centre to cope with 100 households, we wanted this assumption tested. It is methodologically important to determine whether or not a hospital could monitor 100 health centres, 50 dispensaries and 25-30 households in their respective catchment areas. Hence the reference points for sampling were the health facilities except for two villages, Ivingoni and Musingini, which do not have immediate access to a health facility and which were selected as control villages in the study. Further, there was need to include an additional village situated in a rural set-up but within reach of Kilwezi Health Centre so as to enable comparison with the households within Kilwezi Town. Mikuyni, situated about five kilometres away from Kilwezi town was selected for this purpose.

With the help of local village elders, complete lists of households were compiled within the selected villages. These lists formed the sampling frames. Then the cluster households in 12 clusters were randomly selected from those sampling frames. In total, 300 households were included in the study. For Cross-sectional Survey II in December 1991, 22 households had migrated out of the cluster areas or ceased to exist; 18 of these were replaced with the new tenants or occupants of the houses or with the next door households.

Sensitisation
It was important that people in the selected villages were informed about the survey. Several public meetings ('barazas') were therefore convened in the target areas of the study. These barazas had two purposes:
(i) To enlighten the communities about the purpose, objectives, coverage of the HMIS and their role in its development.
(ii) To enable the communities to participate in the nomination of survey interviewers.

The barazas were called by the local government officials, the assistant chiefs, in the selected villages. Nomination of interviewers conducted at the barazas was limited to the same villages.

Selection and Training of Supervisors
While interviews in a subject-perceived illness survey should preferably be conducted by non-medical interviewers, any medical assessments or interpretations should be made by medically trained people. In this survey, the clinical officers and nurses in charge of the health facilities situated within the vicinity of the selected areas took part as first level supervisors. They received completed questionnaires from the interviewers and checked them with regard to completeness, reliability and consistency.

Supervisors were trained in Kilwezi for one day. The training consisted of: (i) Methods of supervision, field editing and validation of the data; and (ii) Understanding the contents of the questionnaire.

Selection and Training of Interviewers
To ensure sustainability and replicability, implementation must be reasonably inexpensive, easy and based on locally available human and financial resources. It is also methodologically
important to compare various interviewer options. We decided that the following be the categories from which to select interviewers:

(a) Community health workers (CHWs) in the area
(b)iterate adults settled in the village
(c) Civil servants working in the village
(d) Traditional Birth Attendants (TBAs)
(e) Secondary school leavers from the village

With the help of the local administrators and politicians, several community meetings (barazas) were held within the villages for the purpose of selecting interviewers. At these barazas the villagers were asked to furnish lists of potential candidates from within the village. All listed candidates were then called to Kidwazi for interview. The interview was conducted in writing and tested aptitude and quantitative skills as well as ability to translate some statements from English to Kikamba, the local language.

Three kinds of interviewers were selected: Community Health Workers in Ivingoni and Manyatta villages, civil servants in Manyatta and Kidwazi Mbuu villages, and secondary school leavers (Form IV) in the remaining villages. Twenty-six interviewers were eventually selected, each allocated fifteen households to cover.

In the 1991 Survey, literate villagers conducted the interviews in Masaku Nlogo and in Musingiri, replacing the four Form IV students who did the 1990 interviews. The civil servants were community development assistants, public health technicians, agriculture extension officers and water development officers.

Interviewers were trained in Kidwazi for three days; two days of classroom teaching and one day for pre-testing the questionnaire. Every interviewer conducted at least one pre-test interview. The classroom session involved going through the contents of the questionnaire and the accompanying notes and instructions. They were also given orientation about the project and taught how to conduct a household health survey:

i) How to approach a respondent;
ii) How to introduce oneself before the interview;
iii) How to conduct the interview and to establish a harmonious working relationship with respondents;
iv) Techniques of minimizing non-response rates;
v) How to use the survey equipment in collecting data, e.g. weighing scales, measuring tapes, etc.

After pre-testing, conducted in Kidwazi town, the questionnaires were scrutinised in order to identify improperly worded questions and those that were not quite well understood. One afternoon was devoted to revision and review of pre-test findings.

The Questionnaire

The questionnaire was designed to solicit information in the following areas:

1. Household characteristics and demography;
2. Water supply and sanitation facilities available;
3. Illness, injuries and health care utilisation;
4. Mortality;
5. Immunisation and child nutrition;
6. Household income.

The questionnaire included 106 questions; it was written in English accompanied by a Kamba language translation. Notes and instructions to interviewers and respondents were also prepared in both languages. A pilot survey was also performed in order to determine and test the
operational aspects of the survey organisation. The pilot survey was conducted by the same interviewers as for the main survey. It was also conducted in Kibwezi town but in a household sample different from that of the pretest interviews. Most of the questions were pre-coded and open-ended questions were few.

Data Processing
Data were edited both in the field and in the office. Field editing enabled early detection of errors and reconstruction of interviewers and questionnaires. Field editing was done by supervisors. Editing in the office was basically undertaken to ensure that the data handling such as coding, totals, etc., was uniform. Editing was carried out by two different and independent persons. Data entry was done by a computer specialist on an IBM compatible 40 megabytes PC. For the Cross-sectional Survey I, Dbase III+ was used for data entry. A data management software, EPI-INFO was used in the case of Cross-sectional Survey II. The computer also had several statistical analysis software such as SAS, SPSS and MSTAT II.

Validation
Validation was conducted through three different mechanisms:

i) Supervision of interviewers;
ii) Control of internal consistency and completeness of filed questionnaires;
iii) Medical interpretation of information in completed questionnaires.

Interviews were supervised by both the Project Leader in Kibwezi and by the nurse and the clinical officers in-charge of the nearest health facility. The Project Leader made field spot-checks to ensure that the interviewers were carrying out work properly in accordance with the agreed plan. The staff in charge of local health facilities also occasionally checked on the interviewers. Internal consistency and completeness of returns was controlled through rigorous editing of the completed questionnaires both in the field and in the office. The exercise involved scrutinizing selected specific questions.

Socio-economic classification of households
Since socio-economic classification of households is important for social epidemiology, we attempted to develop a three-levels classification using socio-demographic data on household rather than income/asset data, which are known to be under-reported and difficult to obtain. Education of household head, size and quality of main house (roofing and wall material) and availability of latrine were the variables used as a basis for classification.

Survey costs
Survey costs can be subdivided by activity and by type of resource input. Estimates based upon project accounts and field supervisor estimates of manpower time utilization are as follows, expressed in KSh. '000 (1 SEK 5 = KSh 25.4 and 1 CAN$ = KSh 28.0).

A large proportion of the total cost in 1990 and 1991, was computer costs related to data processing. This is due to the need to test different methods of analysis which implied much time spent by the computer programmer on the project. Some of the learning costs, are likely to be considerably lower in a subsequent project of this kind.

Conclusions
The cross-sectional household health surveys have generated a variety of information not available through the ordinary health management information system. Some of this information is likely to affect health care planning at district level and below. Household composition appears to be changing with migration, delayed marriages and increasing pressure on households to have one or more members generating cash income through employment in more or less
Table 1. Breakdown of cross-sectional survey costs 1990 (KSh's 000)

<table>
<thead>
<tr>
<th>Activity</th>
<th>Staff time</th>
<th>Field allowance</th>
<th>Staff accommodation</th>
<th>Transport</th>
<th>Stationery</th>
<th>Computer costs</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Sensitization and sampling</td>
<td>32.0</td>
<td>4.5</td>
<td>14.1</td>
<td>10.5</td>
<td>–</td>
<td>–</td>
<td>61.1</td>
</tr>
<tr>
<td>2. Interview training</td>
<td>3.3</td>
<td>–</td>
<td>1.3</td>
<td>–</td>
<td>1.0</td>
<td>–</td>
<td>5.6</td>
</tr>
<tr>
<td>3. Execution of the survey</td>
<td>10.8</td>
<td>0.9</td>
<td>3.8</td>
<td>7.0</td>
<td>10.0</td>
<td>1.8</td>
<td>34.3</td>
</tr>
<tr>
<td>4. Data processing</td>
<td>24.0</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>432.0</td>
<td>456.0</td>
</tr>
<tr>
<td>5. Analysis write-up</td>
<td>36.0</td>
<td>–</td>
<td>17.8</td>
<td>6.0</td>
<td>6.0</td>
<td>3.4</td>
<td>66.2</td>
</tr>
<tr>
<td>6. Information feedback</td>
<td>8.0</td>
<td>2.7</td>
<td>12.5</td>
<td>2.0</td>
<td>2.0</td>
<td>–</td>
<td>95.7</td>
</tr>
<tr>
<td>Total</td>
<td>114.1</td>
<td>8.1</td>
<td>49.5</td>
<td>25.5</td>
<td>19.0</td>
<td>437.2</td>
<td>718.9</td>
</tr>
</tbody>
</table>

Table 2. Breakdown of cross-sectional survey costs 1991 (KSh's 000)

<table>
<thead>
<tr>
<th>Activity</th>
<th>Staff time</th>
<th>Field allowance</th>
<th>Staff accommodation</th>
<th>Transport</th>
<th>Stationery</th>
<th>Computer costs</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interview</td>
<td>2.0</td>
<td>–</td>
<td>2.0</td>
<td>–</td>
<td>1.0</td>
<td>–</td>
<td>5.0</td>
</tr>
<tr>
<td>Execution of the survey</td>
<td>11.0</td>
<td>11.4</td>
<td>–</td>
<td>5.0</td>
<td>11.3</td>
<td>2.0</td>
<td>40.7</td>
</tr>
<tr>
<td>Data processing</td>
<td>15.0</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>504.0</td>
<td>519.0</td>
</tr>
<tr>
<td>Analysis and write-up</td>
<td>50.0</td>
<td>–</td>
<td>20.5</td>
<td>10.0</td>
<td>6.0</td>
<td>5.0</td>
<td>91.5</td>
</tr>
<tr>
<td>Information feedback</td>
<td>10.2</td>
<td>30.0</td>
<td>14.5</td>
<td>12.0</td>
<td>2.8</td>
<td>–</td>
<td>69.5</td>
</tr>
<tr>
<td>Total</td>
<td>88.2</td>
<td>41.4</td>
<td>37.0</td>
<td>27.0</td>
<td>21.1</td>
<td>511.0</td>
<td>725.7</td>
</tr>
</tbody>
</table>

distant urban centres. There is a high proportion of female-headed households in some urban areas and these households are at high risk of excess morbidity and mortality and of poor access to health and social services. They need to be identified and actively monitored by dispensary staff, Family Health Field Educators, Public Health Technicians and Community Health Worker.

Educational levels are rising, but still over one-quarter of household heads have never been to school. This is an obstacle to health improvement considering the association between educational level and health-related behaviour. They should be encouraged to participate in adult education programmes where available, and they should be given priority when health education programmes are being planned. Inter-sectoral collaboration, for instance with agriculture and social services, in stimulating the formation of local women’s groups, may help establish local safety-nets for the most vulnerable.

The findings regarding housing, water supply and sanitation offered no major surprises. The average reported 1990 consumption of household water was 6 litres per person per day which is a very low figure, likely to be an important obstacle to hygiene improvement in the area. The consumption dropped to 2.8 litres in 1991 when below average rainfall was recorded, and probably needs to increase at least four or five-fold before a significant health and hygiene improvement can be expected. Refuse disposal is generally unhygienic and 32% of all households had no access to latrine; the proportion was much smaller in urban centres. From a health planning standpoint these findings justify increased efforts in improving excreta disposal practices in non-latrine households and in improving access to water for domestic use. Some of these efforts should be shared or coordinated with the agricultural and water development sectors.

The reported mortality in sample households was low, about 16 during 12 months against the expected 35. Under-reporting can be due to the fact that the survey was conducted early in the study when the interviewers were still little known by the sample household heads, and there
was also a general reluctance to volunteer information about childhood deaths. The longitudinal survey and the second Cross-sectional Survey (CS II) conducted in December 1991 provided opportunities to compare findings obtained under different circumstances. Socio-economic levels measured with the help of the educational level of the household head, the size and quality of the main house and the presence of a latrine declined between 1990 and 1991, partly because those houses that represented replacements in the CS II households were of relatively low quality.

Reported morbidity, as reflected in the 30-day recall questions, turned out to be lower than expected; the average number of days ill per person per month was 10.9 in 1990 and 14.7 in 1991. Reported childhood morbidity was surprisingly low. This is partly due to memory decay during the 30-day period with brief and undramatic illness episodes quickly being forgotten and not reported during subsequent interviews.

The number of 'days off normal duty' should be more useful as an indicator of morbidity than total days ill, but this is uncertain in low-income rural areas such as Kibwezi, where few households can afford activity restrictions even in times of illness of mild and moderate degree of severity.

As regards the methods applied in the cross-sectional surveys, we draw the following conclusions:

- The household sample size was rather small for proper analysis of mortality and morbidity by age and sex;
- Household interviewers, when exploring illness episodes, should ask probing questions on a small number of illness categories in order to overcome respondents' memory loss and their own inability to interpret reported symptom combinations;
- Young school-leavers or students should be avoided as interviewers while literate villagers properly trained and instructed, have turned out to be generally acceptable, reliable and cooperative;
- The questionnaire should be reduced; some socio-economic household information is unnecessary, the 12 month recall questions on morbidity should be omitted, the questions included to help validate the Delphi panel study answers can be eliminated;

A list of 8-10 broad illness categories should be printed on the illness recall questionnaire in order to facilitate classification on the basis of experiences with reported symptoms (Gesler 1979; Fathaga 1977; Kroeber 1982). On the basis of reviews of the returns from our current survey we recommend the following classification:

- 01 gastro-intestinal
- 02 respiratory
- 03 skin
- 04 eye, ear
- 05 physical injury
- 06 genito-urinary, including STDs
- 07 pregnancy related
- 08 joints
- 09 mental
- 10 other, unspecified
- 11 not stated

LONGITUDINAL HOUSEHOLD HEALTH SURVEY

Introduction

The household health interview survey component of the project comprised three surveys: two cross-sectional surveys conducted in December 1990 and December 1991, respectively, and one longitudinal survey conducted from March 1991 to February 1992.

The longitudinal survey was designed to provide data on illness episodes over a longer period of time and on action taken in relation to them, possibly showing seasonal variations. It also investigated health care expenditure and reasons for not seeking health care at clinics and hospitals.
Methodology

Sampling
The household sample used during the Cross-sectional Survey I was retained. The total sample was 390 households from 12 clusters, 11 with 30 households and one with 60. The sampling method was described earlier.

Sensitization
Sensitization was conducted in the selected villages in 1990 prior to the first cross-sectional survey, and there was no need for sensitization specifically for the longitudinal survey. However, the sample households were further briefed regarding the longitudinal survey, especially its objectives, the confidentiality of the information to be solicited and the repetitive nature of the household interviews, related to the two-week recall period. The household members were requested to provide maximum cooperation bearing in mind a possible decline in respondent interest during the 12 months survey period.

Training of supervisors and interviewers
Interviewers and supervisors were the same as during cross-sectional survey I (see Chapter 3). Training of supervisors was conducted for one day.

The topics discussed during the training included:

- Survey background, goal and specific objectives;
- Duration of the survey and its implications;
- Role of interviewers and responsibilities of supervisors.

The training started with an introduction which included background to the survey, goals, specific objectives and time frame. Terms of reference for the supervisor and their role in the implementation of the survey were explained and discussed. The questionnaire was reviewed, discussed and translated into Kikamba to ensure the participants' understanding of the questionnaire.

Interviewers who had already obtained basic training prior to Cross-sectional Survey I, were given two additional days of training before the start of the longitudinal survey. The topics included survey background, purpose, duration and the role and responsibility of the interviewers. The questionnaire was examined question by question and then discussed with emphasis on the corresponding set of instructions. The interviewers tried out the questions on patients visiting Kibwezi Health Centre. The questionnaire was reviewed again and some modifications made, and then the whole group participated in its translation into Kikamba. This and the supervisors’ Kikamba versions were then merged to form a questionnaire which everyone critically reviewed. The final version was then independently re-translated into English and turned out to be almost identical to the original English version. The exercise to translate the questionnaire into and from Kikamba was deemed to be important since interviewers were to administer the questions in Kikamba. It also contributed to the interviewers understanding of the questions. They had access to the Kikamba version for reference throughout the duration of the survey.

The Questionnaire
The questionnaire covered the following areas:

i) Disease symptoms and signs, if any, in any household member during the preceding two weeks;
ii) Dates when episodes started and ended;
iii) Activity restriction related to illness episodes;
iv) Perceived severity and perceived causes of illnesses, if any;
v) Care-seeking behaviour and reasons for choice of action;
vi) Surgical operations performed, if any;

Household expenditure related to health care sought.

The questionnaire also had sections on: (1) medical assessment by the officers in charge at the nearest health facility; and (2) validation team assessment. In both cases, assessment was to be made on:

a) Most likely diagnosis based on questionnaire data
b) Disease code according to International Classification of Health Problems in Primary Care (ICHPPC-2)
c) Likely prognosis (good, poor or very poor)
d) Risk of infecting others (none, high or very high)
e) Perceived appropriateness of action taken by the household

Data processing

Scrutiny of the completed questionnaires and correction of errors and omissions—data editing were carried out first at the nearest health facility by the clinical officers and nursing staff, and then also in Kitwezi by the Project supervisor.

Data entry was done on an IBM computer using EPIINFO software. Statistical analysis was carried out using two software packages, SAS (Statistical Analysis System) and SPSS (Statistical Package for Social Sciences).

Project Supervision

The responsibility of the supervisor in this project included:

a) Directing the conduct and work of the interviewers, for instance on how to phrase questions in interpreting replies.

b) Editing completed questionnaires. Early checks of the interviewers work and the questionnaires to be sure that the interviewer understands the instructions and is following them.

c) Re-interview some of the household heads to enable cross-checks of the information collected.

d) Ensure that the laid down procedures for reporting and operations of the surveys are followed.

The project included supervision at three levels. They were:

i) Local health facilities

All clinical officers and nurses in charge of health facilities in the cluster areas were appointed first level supervisors of the interviewers working within their catchment areas, except Ivingoni and Musingini clusters which did not have any nearby health facility. Ivingoni was supervised from Mrito Andei and Musingini from Kitwezi Mjini.

Supervision at this level involved activities (a) and (b) above. On a few occasions the project staff in Kitwezi also carried out some of these duties to ensure that everything was in order.

ii) Project Leader

The Project Leader, a biostatistician with a PhD degree, based in Kitwezi Mjini was responsible for all the supervisory functions of the project, that is (a)—(d) as listed above.

iii) Medical Validation Team

This team conducted random spot-checks and covered activities (a)—(d), including conducting medical examinations to assess to what extent the reported illness cases were correctly described
and classified. It consisted of a physician and a laboratory technician. Its field work was concentrated to the month of November 1991.

Medical Validation
Medical assessment of the likely diagnosis and appropriate interventions for each illness episode was made by locally medically trained personnel on the basis of interview findings. The first-time validation was made by nurses and clinical officers at the nearest health facility. The assessments were based upon the interview records and in some cases of uncertainty the nurses and clinical officers re-interviewed the respondents; at times the whole process even involved examining the ill person concerned, either at home or at the health facility. Cases that needed further laboratory examination were also undertaken at the health facilities especially in Mbindu, Manyatta, Misongeni and Shauri Moyo.

Medical assessments were also undertaken by a mobile ‘supervision/validation team’ consisting of a physician and a laboratory technician with field equipment. Drugs were provided for treating needy cases detected during the survey. The needs were determined from the information gained from the completed questionnaires. Other medical problems brought to the attention of the team were dealt with as time permitted.

Post-Survey Enumeration
A follow-up survey of a few randomly selected respondents was carried out with two purposes, namely:
(a) To test the accuracy and consistency of the study data;
(b) To check whether the interviewers followed the appropriate implementation procedures up to the end of the survey.

Forty two households were randomly selected and re-interviewed to find out if the interviewers had actually been there as planned. Out of these only 2 households reported that they had seen the interviewer latest in January. According to previous checks, the performance of the two interviewers had been good.

Survey Costs
The cost of the longitudinal survey was estimated at KShs. 692,900 (US$24,700) of which approximately one third was spent on the execution of the survey and another third on data processing (mainly computer costs). A breakdown is shown in Table 3.

<table>
<thead>
<tr>
<th>Table 3</th>
<th>Survey costs 1991 (KSh '000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activity</td>
<td>Staff time</td>
</tr>
<tr>
<td>Sensitization, sampling</td>
<td>5.0</td>
</tr>
<tr>
<td>Interview training</td>
<td>9.5</td>
</tr>
<tr>
<td>Execution of survey</td>
<td>14.0</td>
</tr>
<tr>
<td>Data processing</td>
<td>65.0</td>
</tr>
<tr>
<td>Analysis/write-up</td>
<td>35.0</td>
</tr>
<tr>
<td>Information feedback</td>
<td>28.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>280.3</strong></td>
</tr>
</tbody>
</table>

The cost of the longitudinal survey was estimated at KShs. 692,900 (US$24,700) of which approximately one third was spent on the execution of the survey and another third on data processing (mainly computer costs). A breakdown is shown in Table 3.
Medical Validation
Quality of the Interviewing Process.
Data were gathered using 12 variables and an additional 13th variable consisting of the observer's general comments.
The findings on the household interview survey indicated that the interviewers were doing their work well, with only a few having problems. All interviewers were polite and all except two had good rapport with their clients. Three interviewers, all secondary school leavers, had difficulties with the Kamba language, one being seriously handicapped.
The phrasing of questions is crucial. Frequently the interviewers asked whether the person had recovered from the previous reported illness, rather than asking simply if the illness occurred since the last visit. The result was that new episodes were not always reported, especially when they involved the interviewee, and often these were later brought up when household members realized that there was a doctor in the team and prospects for treatment. But the individuals were genuinely ill in most instances.
In addition, there were problems with the question "where health care was sought. Most interviewees phrased the question as 'did you go for treatment' or 'what did you do about the illness?' The structure of the question made it necessary to read out in turn the various options. Some interviewers asked 'did you spend any money on this illness' which is clearly inadequate in relation to Question 16. This was worsened by lack of probing in four interviews.
The recording of symptoms was done immediately. It was difficult for the clinical officer to understand some sentences written in poor language. Privacy was another problem. Everyone in the household tended to crowd around the respondent and even sometimes help answer questions. Under these circumstances, complaints considered private or embarrassing by the community would not be expressed.
Credit must be given to the field supervisors of the interviewers. All the respondents said that the interviews were regular. Although all respondents said that previous interviews were similar to the present one, there were indications that this was not so in a number of cases. Privately, and sometimes publicly, it was expressed to the medical officer that respondents were tired of being asked about illnesses for which they never got any assistance. In three incidents, respondents loudly expressed lack of trust in the interviewers who only talked and did nothing for them. This may become a serious problem. It is recommended that the validation rounds be carried out at least twice per one-year period, and any possible support to referral to health care.

Validation of Diagnosis
Sixty-four illness episodes were examined during the validation exercise. Out of these, 56 interview forms could be retrieved, and information was complete for 55 forms which were analyzed. In some instances, there were more than one diagnosis for the same patient, and therefore the denominator for diagnosis is larger.
Top five interview diagnoses were:

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Upper respiratory tract infections</td>
<td>13</td>
</tr>
<tr>
<td>2) Diseases of the skin</td>
<td>9</td>
</tr>
<tr>
<td>3) Arthritis</td>
<td>6</td>
</tr>
<tr>
<td>4) Intestinal worms</td>
<td>5</td>
</tr>
<tr>
<td>5) Diseases of the genitourinary system</td>
<td>3</td>
</tr>
</tbody>
</table>

Top five clinical diagnoses were:

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Respiratory infections</td>
<td>11</td>
</tr>
<tr>
<td>2) Genito-urinary infections</td>
<td>8</td>
</tr>
</tbody>
</table>
3) Skin conditions 8
4) Intestinal worms/infections 6
5) Avitaminosis 4

Concurrence of Interview and Physical Examination Diagnoses
The diagnoses arrived at by the clinical officer based on interview information were compared to diagnoses made on the spot by the medical officer of the validation team (Table 4).

<table>
<thead>
<tr>
<th>Rating</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exact</td>
<td>12</td>
<td>22.6</td>
</tr>
<tr>
<td>Good</td>
<td>11</td>
<td>20.8</td>
</tr>
<tr>
<td>Poor</td>
<td>13</td>
<td>24.5</td>
</tr>
<tr>
<td>Very poor</td>
<td>17</td>
<td>32.1</td>
</tr>
<tr>
<td>Total</td>
<td>53</td>
<td>100</td>
</tr>
</tbody>
</table>

Long Term Disability
An attempt was made to determine the prevalence of chronic disability among the ill persons seen. A person was deemed chronically disabled if, from examination and observation of the household, it was judged that the person was unable to independently support himself or herself for most of his/her needs as a result of illness, or was unable to pursue an occupation (including schooling) due to physical or mental impairment. Eleven (11) persons out of 53 had long-term disability.

A large discordance was noted between interview and physical examination diagnoses. There was only 44% agreement for the 'exact' and 'good' approximation categories. The morbidity pattern observed was not unusual. Acute respiratory infections were the commonest ailment recorded and easily identified by the checking clinical officer because of distinctive symptoms. There was, however, no specificity, all respiratory complaints being called Upper Respiratory Tract Infection (URT). Whether a case of Bronchial Asthma or of common cold. Surprisingly, malaria was diagnosed only twice in the interview diagnosis and not at all in the validation exercise. This was surprising because in the outpatient situation malaria is diagnosed almost in one patient out of every three and in some areas close to one in two. Urogenital infections were poorly diagnosed on the basis of interview, but ranked second in the physical examination diagnosis top five list and fifth in the interview diagnosis list. Of greater significance however, is the observation that information on STDs and other sensitive diseases is not freely disclosed to the interviewers.

The concurrence of interview and examination diagnoses was low, 44% for the 'exact' and 'good' approximation categories. Respondents frequently give incomplete or distorted descriptions of symptoms perhaps to satisfy the interviewer. This undermines validity of the health information collected by the interviewers. Some of the problems have already been noted, e.g. lack of privacy, lack of probing and incorrect phrasing of questions, but another major problem is the age and immaturity of the interviewers, most of whom were secondary school leavers. Culturally, respondents would find it difficult to reveal personal and sensitive information to these youths. All in all the validation exercise indicates that the current methods of collecting information may give rise to results of low validity, and possibly low reliability, in assessing the morbidity load by the longitudinal household survey method.

The high disability rate was surprising. A global estimate of average community disability rates 7-10%. A partial explanation is that the survey looked at areas which are either in or very close to towns, and it is known that towns attract the disabled because of the opportunities for begging. No data were collected on the means of support of the disabled, but all except two
destitute persons were living with their immediate or extended families. Four out of the eleven disabled persons (36%) could easily benefit from rehabilitation. Globally it is estimated that most of the disabled are amenable to corrective measures, but in reality only 2 - 3% of those in need receive services.

Post-survey Enumeration
As part of any survey design, it is important that a small follow-up survey on a few randomly selected respondents be carried out with dual purpose, namely:
(a) To test the accuracy, precision and consistency of the study data.
(b) To confirm whether the interviewers followed the appropriate implementation procedures up to the end of the survey.

About 42 households were randomly selected and re-interviewed to find out if the interviewers had actually been there recently. Out of these only 2 households reported that the interviewer had failed to appear during the preceding weeks, latest in January. The previous performance of the two interviewers had been good.

The findings from the post-survey enumeration confirmed that the interviewers carried out their surveys diligently. The results showed that except for two clusters involving 3 interviewers, where few cases of cheating were detected, of implementation the interviewers were regularly conducted.

Conclusions
The longitudinal survey monitored the number, duration and effects of illness episodes in the cluster households, especially information on differences in disease incidence between different age and sex groups in the population. Generally, small children and women experienced high morbidity compared to adult males.

A limitation of the survey, with lay interviewers recording symptoms as described by respondents, was that it could not provide information on diagnosis. This weakness was not only a problem in the longitudinal survey alone but also in the cross-sectional surveys I and II. In the case of cross-sectional as well as longitudinal household interview surveys using non-medical people as field interviewers, it is recommended that a list of 8 - 10 broad illness categories be printed on the illnessepisode recall questionnaire as a basis for diagnostic classification. There is support for this from past survey experiences (Gesler 1979; Fahbea 1977; Kooogel 1982).

The stated number of days out-of-normal duty during illness episodes was used as an indicator of the socio-economic impact of illness. This was clearly a rather crude indicator, measuring loss of production within the household. It excludes direct health care costs and also costs indirectly paid by household members, e.g. for time spent on home care and transport outlays for accompanying the sick person to health facilities.

The respondents and interviewers found it difficult to specify the number of days 'partially restricted'. Another difficulty in this context was to determine the average daily number of working hours. It was therefore concluded that a study on the socio-economic impact of illness on African households should be conducted separately with a smaller and carefully selected sample.

The two illness severity measures, pain or discomfort experienced and perceived seriousness were consistent and comparable. In a longitudinal study, more reliable and precise information could be secured on perceived seriousness of illness than on the level of pain or discomfort which could therefore be discarded.

The survey tried to capture the dynamics of care-seeking behaviour and its association with the local provider situation and the ill person's perception of the illness. The majority of the illness episodes were either reportedly treated using self-medication or clinic/hospital care, and relatively few were reported to be handled by local service providers such as community health workers (CHWs), traditional birth attendants (TBAs), traditional healers and medicine men. We
have reasons to assume a certain degree of under-reporting.

The stated care-seeking behaviour of males and females age 15 and over was essentially similar but with a slightly stronger tendency among females to seek care closer to home, from household members, friends, TBAs, CHWs and traditional healers. The frequent use of shop medicine is disturbing in view of the medical ignorance of the "provider", and basic drug information for shopkeepers and consumers is much needed. The study clearly highlighted the problem of the planning of health care services such as the targeting of health education efforts and the inspection of the range of drugs sold in general shops. The survey also showed the interlinkages between the degree of pain or discomfort and health care-seeking behaviour. The longitudinal survey is more suitable for such analyses than cross-sectional surveys.

Because of the low surgical operation rate and the large sample size required for sufficient numbers of surgical operations, the longitudinal survey is not an appropriate method for gathering information on the subject. A large cross-sectional survey with longer recall is preferable as a complement to facility-based studies.

The method provided an opportunity to study private health care financing in the division. But only 72 individuals reported their outlays for services received, three quarters having spent KShs. 70 or less. Government dispensary services are free, but user charges may not have been required at Health Centres at the time of the study.

It was concluded that a longitudinal survey for monitoring health conditions and care-seeking behaviour is a useful but relatively expensive component of a health information system, also causing a growing amount of respondent fatigue and frustration over a months period. Implementation requires a fair amount of experience and management capability and also the support and active participation of people in a number of local villages. If conducted every 4-5 years in a given district and with a one-month interview recall period, results applicable to local planning could be sufficient to justify the effort.

DELPHI PANEL STUDY

Introduction

Two methods for generating health-related data that have been tested within the project are the household health interview surveys and a Delphi-type panel study. The household health interview survey method, at least the longitudinal one, is a relatively expensive and time-consuming approach, requiring trained interviewers to visit households at regular intervals to solicit information. The Delphi-type panel approach involves a selected small group of local community members who are knowledgeable regarding matters affecting the community. The Delphi panel members are individually and independently interviewed, concerning their opinions about important health issues within their community. Thus instead of canvassing a large proportion of community members as in household surveys, the Delphi-type approach concentrates on the few panel members only. Moreover, in the latter approach only a few interviewers are engaged. Therefore, with regard to the kinds of data obtainable from the panel members, the Delphi method of generating health information is a comparatively quick and inexpensive method of data collection. Despite its much higher cost, the household health interview survey has major advantages since it collects broader and more detailed information on illnesses and disabilities than the Delphi method. The Delphi panel has several shortcomings and should be seen as a complementary method, useful for generating a limited range of information at low cost.

Methodology

Panel Selection Process

Identification of panel members took two months. Since several panel members were illiterate, the standard methodology had to be modified to allow the use of interviewers.
An important feature of a Delphi study is the anonymity and independence of individual panel members. No member should know who else is included in the panel. This determined the manner in which the selection was done. We interviewed teachers in local schools and had informal discussions with members of the local community. Local administration officials, e.g. village elders and chiefs, were avoided during the process; we suspected that they would tend to regard enlightened members of the local community as political adversaries or competitors and hence be reluctant to nominate such enlightened individuals as panel members.

Once identified, nominees were visited by the Project Leader who assessed their suitability. The results of the Cross-sectional Survey I (Nordberg and Oranga 1992) had indicated that virtually all heads of household in Kitwezi Division had at most primary education. Therefore educational achievements were not given emphasis in the selection.

Questionnaire Development
Information originating from the Delphi study is meant to supplement that obtained from other sources. To test the validity of the method, however, the questionnaire for the Delphi study included some questions almost identical to those asked in the household health interview surveys. Obviously, it is not possible in a Delphi study to obtain data on actual numbers, say number of households with latrines in a location. Such questions were rephrased to solicit information on proportions, for instance, what proportion of households are perceived to have latrines.

The questionnaire was designed to generate information in four areas:

i) Water supply and sanitation;
ii) Illness incidence and prevalence;
iii) Maternal and child health;
iv) Other issues such as health care demand and cost-sharing.

The questions were designed so as to allow comparison with the information obtained from the household health survey, particularly the cross-sectional survey I. The full Delphi questionnaire is included as Annex IV.

Selection of Interviewers
Most panel members were not literate enough to be able to fill a questionnaire without assistance. Hence there was need for interviewer assistance. One of the two interviewers was recruited in the cluster. Twelve interviewers were engaged in the study, one to every cluster. They were drawn from the pool of 26 interviewers who participated in the household health surveys conducted by the project. Each interviewer assisted two panel members. As no sensitive questions were asked, age and sex were not considered critical when selecting interviewers.

The process of selecting interviewers ensured that the following categories were included:

<table>
<thead>
<tr>
<th>Category</th>
<th>No.</th>
<th>Education</th>
</tr>
</thead>
<tbody>
<tr>
<td>(i) Community Health Worker</td>
<td>1</td>
<td>8 years</td>
</tr>
<tr>
<td>(ii) Literate adult villagers</td>
<td>2</td>
<td>8 years</td>
</tr>
<tr>
<td>(iii) Civil Servant</td>
<td>1</td>
<td>12 years</td>
</tr>
<tr>
<td>(iv) Secondary school leavers</td>
<td>8</td>
<td>12 years</td>
</tr>
</tbody>
</table>

Training of Interviewers
The interviewers were briefed on the study and informed of the names of the Delphi panel members in their respective villages. The questionnaire was extensively discussed.

The questionnaire was translated from English to Kitamba language in three stages. The questionnaires were distributed to the interviewers a week before the training session and they
were asked to translate the questionnaire into Kamba individually before the training session. The twelve interviewers were divided into two groups and each group was requested to translate the questionnaire independently. The two groups jointly discussed the translation and eventually agreed on the final version.

The questionnaire was pretested in one cluster, Kibwezi Mijini. Each interviewer conducted one interview during pre-testing. Because of the time taken to identify, prepare and convince a respondent to be interviewed, the time taken for one interview was between 30 to 60 minutes. The results of the pretest interviews were jointly discussed by the whole group of interviewers and appropriate action was suggested in areas of problems.

Ranking and Scores
In a Delphi-type study, response to some questions can be recorded in terms of ranks, assuming some relationship, linear or nonlinear, between the importance of the outcomes and ranks. The alternative would be to give scores with the highest rank to have the lowest score and vice versa. The latter approach is not suitable for panel interviewing since it requires that each member assigns scores which in turn involves some arithmetic and this might be confusing.

Ranking is suitable when more than two diseases are to be compared, when an ordering is possible but quantitative scores cannot be assigned. It is difficult to rank morbidity of more than three or four diseases unless the differences are large. Ranks may be summarised by means and standard deviations.

Survey costs
The cost of the Delphi study was estimated at KSh 105,800/= (US$ 3527). The costs were divided as follows between components:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Staff time</th>
<th>Field allowance</th>
<th>Staff accommodation</th>
<th>Transport</th>
<th>Stationery</th>
<th>Computer costs</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensitization and sampling</td>
<td>15.0</td>
<td>2.5</td>
<td>-</td>
<td>2.1</td>
<td>-</td>
<td>-</td>
<td>19.6</td>
</tr>
<tr>
<td>Interviewer training</td>
<td>2.0</td>
<td>-</td>
<td>-</td>
<td>0.2</td>
<td>-</td>
<td>-</td>
<td>4.8</td>
</tr>
<tr>
<td>Execution of survey</td>
<td>7.5</td>
<td>0.9</td>
<td>-</td>
<td>2.0</td>
<td>0.7</td>
<td>-</td>
<td>11.1</td>
</tr>
<tr>
<td>Data processing</td>
<td>20.0</td>
<td>-</td>
<td>-</td>
<td>0.5</td>
<td>10.0</td>
<td>30.5</td>
<td></td>
</tr>
<tr>
<td>Analysis/write-up</td>
<td>5.6</td>
<td>-</td>
<td>-</td>
<td>0.5</td>
<td>1.0</td>
<td>7.1</td>
<td></td>
</tr>
<tr>
<td>Information feedback</td>
<td>8.0</td>
<td>2.7</td>
<td>12.5</td>
<td>2.0</td>
<td>7.5</td>
<td>-</td>
<td>32.7</td>
</tr>
<tr>
<td>Total</td>
<td>58.1</td>
<td>6.1</td>
<td>15.1</td>
<td>6.1</td>
<td>9.4</td>
<td>11.0</td>
<td>105.8</td>
</tr>
</tbody>
</table>

Conclusions
No serious problems were encountered with the implementation of the Delphi study, and this is true also regarding the use of interviewers who is not part of the method as normally applied.

A difficult task in selecting panel members was to recruit them without jeopardizing their anonymity, assuming that panel member anonymity is important also in a rural African context; this needs to be tested.

The Delphi technique is likely to reflect more of the truth regarding mild illness episodes and conditions, which are not seen at health facilities for one reason or other and do not, therefore, appear in facility based morbidity statistics. It is possible, however, that young mothers and housewives are more useful panelists for such questions than middle-aged wise men, and tests with different panel compositions—for instance with regard to age, sex, and educational background—are desirable.

Delphi panel data may be useful in addition to facility-based information with regard to those illnesses that are manageable at home as well as those that are not frequently reported to local health persons for social and cultural reasons, e.g. diarrhea,
epilepsy, sexually-transmitted diseases, mental illness, and permanent disability conditions. Given that the technique provided information on unreported illnesses which could otherwise only be identified using the more complex and costly household health surveys, the Delphi method has certain potential advantages.

The questions presented to the Delphi panel were rather simple and less exciting than they could have been. More emphasis could have been paid to socio-cultural aspects of ill health, to perceptions of alternative causes of illness, to methods of examination and various intervention strategies. However, our main objective on this occasion was to test the methodology under realistic conditions rather than to uncover secrets about health problems and care.

There are good reasons to make selective use of the Delphi method, locally adapted, and to focus more upon otherwise hidden and poorly known issues such as chronic conditions, permanent disability, mental illness and socio-cultural factors associated with disease perception, self-care and care-seeking behaviour. There is probably little need for Delphi studies into such morbidity and service consumption trends well known anyway through the existing health information system. Evaluations will be needed to determine whether Delphi studies generate complimentary information of use to planners. The outcome of the study findings on this method was promising and there is strong belief that it has fair potential than demonstrated by this project.

SOCIO-CULTURAL HEALTH INTERVIEW STUDY

Introduction

The IHD project, testing an alternative model for generating sub-district level health information, also investigated socio-cultural issues related to health, illness and medical care. This section describes an interview study of a sub-sample of 52 households in Kilweti Division regarding perceived causes of certain diseases, appropriate preventive and curative measures, cultural practices related to selected treatment of diarrhoea in children, and perception of disease severity and treatment preferences. Planners' and managers' understanding of these issues can provide a broader base for designing measures and planning programmes aimed at improving health in a population.

Studies on socio-cultural/anthropological aspects of health and illness have largely focused on traditional practices and cures such as traditional medicines, witchcraft and magic. Most of these studies have been carried out in non-western societies, particularly in Africa. The Akamba in Eastern Province, classify disease causes into two major categories: 'Man's diseases' and 'God's diseases' (Maina-Ahler 1979). Man's diseases are those associated with witchcraft and sorcery, commonly referred to as 'ou', the witchcraft and sorcery theory of disease causality states that disease is put into a person by an enemy who could be a jealous neighbour or a hostile relative. 'Mundumwue'—a medico-religious specialist referred to as a herbalist/diviner—has the responsibility of determining the cause of illness. This is almost similar to the 'Ajuoga' of the Luu except that 'Ajuoga' can further refer some cases to 'jichi' who is a more powerful traditional healer than a herbalist.

In terms of illness management, the Akamba diseases divide into six classes: those healed by the traditional medico-religious specialist ('mundu mwe'), by a herbalist by a traditional midwife, by self-treatment, by a self-healer, and in hospital, it is indicated that almost all Kamba would secretly visit 'mundu mwe' for any disease perceived to be caused by 'thaiwa' (ritual unconscionable of a person who has transgressed certain traditional rules) or 'ou' (witchcraft). The traditional midwife treats minor ailments and complications related to pregnancy while self-treatment is applied against ailments like colds, coughs and burns. Minor pains, fever, and mild diarrhoea are conditions which the Akamba believe will disappear on their own, but in case they persist or become serious some treatment may be sought. However, they refer to some of these conditions as 'diseases that are healed by treatment of these days', meaning western
therapies. Disease causation vary from community to community in Kenya. However, health related socio-cultural studies indicate that most societies in Kenya believe that certain conditions are better treated using indigenous medicine and that this conceptual distinction does not prevent compoundings of both indigenous and western medical care.

In the literature reviewed, almost no attention is paid to the variation, the strengths and weaknesses, in methods used in collecting data. This is an issue for future studies.

Methodology
Field supervisors and interviewers who had participated in the cross-sectional surveys were trained on how to use the interview protocol and took part in pretesting it. The interviewers, recruited from the sampled villages were trained for 3 days. The training included discussing each item in the questionnaire, interpretation and translation of the questionnaire into Kilamba local language. The interpretations were discussed and agreed upon by the whole group, so as to ensure that every interviewer had a uniform meaning for each question to be asked.

It is believed that social and cultural norms are widely shared within any given community. Hence, in the case of Kilwezi Division, there was no need of conducting the socio-cultural study in the entire sample of 390 households covered in the cross-sectional survey. A random sample of 52 households from the 396 households were selected. Except for the cluster of Kilwezi Mjini which had eight households, remaining eleven clusters had four households each included in the socio-cultural study.

Discussion
The study findings on disease causality, perceived severity, curative and preventive measures, and other traditional health practices are consistent with previous findings by Maina-Ahlberg (1979) and Luijk (1983) in the same area. In most cases the perceived cause of disease did determine the preferred management, while in other cases traditional preventive actions were applied also as curative measures. It appears that the people in Kilwezi in some cases do not differentiate preventive from curative intervention. It is common for indigenous and western-type interventions to be applied simultaneously or sequentially against a given disease condition.

The findings helped in explaining health-related behaviour which may otherwise appear puzzling, such as management of mental illness and infertility. There is an obvious need for more education about mental illness and about measles, for instance to promote immunization as a preventive measure. The nature and handling of different kinds of skin conditions are also poorly known in sample household, probably causing unnecessary suffering and health care expenditure. On the other hand, local view about diarrhea and gonorrhea and their treatment and prevention were essentially consistent with current medical thinking.

The choice of treatment is based on the perceived cause, efficacy of the treatment and severity of the disease. Other factors influencing health care facilities are distance, cost, satisfaction with former visits, information from neighbours and relatives. Conditions such as infertility, mental illness, spontaneous abortion, epilepsy and leprosy are regarded as traditionally influenced, and indigenous treatment options tend to be preferred. However, treatment is usually sought also from western oriented practices to manage these conditions. Van Luijk discovered that the people would conceal a visit to 'mundhu mwe' for a number of reasons: it was shameful, it could alien an enemy in case of witchcraft, people did not want to be called pagan, etc. With exposure to western medicine, the people of Kilwezi can be said to use both indigenous and western medicine.

The information gathered on socio-cultural health issues should be useful for a number of purposes. First, it can help identify indigenous resources and systems more or less widely applied in management of illnesses. Secondly, it can help discover poorly known local health needs of the people. Third, it would help improve the understanding of factors which influence
health and illness, and strengths and weaknesses of various interventions. This means an
improved basis of responding to health needs of the people and therefore, a basis for rational
planning of intervention strategies. Planners need to know how the community perceive the
severity of the different conditions or diseases, because the community's perception influences
the way they respond. Understanding their response to health problems helps identify unmet
needs.

One important factor remains to be emphasized. While it may appear that western and
indigenous medical systems compete and the choice of therapy—depending on perceived cause,
efficacy of treatment, and severity—the indigenous and western medicines are being used, for
any single episode of illness, concurrently or sequentially by a fair number of the population
whether these conditions/diseases are classified as natural or traditionally influenced.

The information gathered on the socio-cultural study will be useful tool for both health sector
managers and other organizations to plan health education strategies/courses of action consis-
tent with peoples values for the purpose of IED project. Data therefore becomes a tool for raising
people's awareness about actual causes of ill health, for educating them on relevant courses of
action they need to take, and also, for identifying and using appropriate and acceptable
indigenous systems and resources to alleviate existing health problems.

Conclusions
This modest and relatively inexpensive study generated data which are conspicuously absent
from ordinary health information systems. It reflects the way local people perceive different
diseases and their causes and, therefore, the actions they tend to take. Diseases are perceived to
be caused by supernatural forces, evil human beings and physical contact, or a combination of
such causes. To manage/treat many of these diseases people rely on both traditional and modern
health care. The indigenous and western medical care systems are used together for a single
episode of illness, concurrently or subsequently.

Even though the indigenous perception of cause of illness still persists to a large extent for
almost all cases of illness, the use of western medical systems is mandatory. The Kamba readiness
to accept new ideas and related health practices should facilitate national planning. It provided
an opportunity to identify gaps in health knowledge and irrational behaviour for which
education strategies consistent with local values can be developed.

Some respondents found the questionnaire too long and felt uncomfortable with continuing
to answer several questions, which were repeated, for the purpose of cross-checking. A few
respondents declined to answer some of the questions. Some male respondents left several child-
related questions unanswered. It is therefore necessary to apply a short and more concise
questionnaire, and respondents should include both men and women. Rural health workers and various extension agents could be trained to use anthropological
methods of data collection, so that such data is collected on a continuous basis, supplemented by
records from existing health facilities and possibly by cross-sectional household health sur-
veys.

Even though the interview schedule was fairly exhaustive and provided adequate informa-
tion for quantitative data, some of the health problems such as health seeking behaviour, need
ethnographic methods of data collection using focus group discussions, intercepts, informal
interviews and participant observation. A combination of different methods would strengthen
the validity of the data.

GENERAL CONCLUSIONS FROM THE PROJECT
The goal and the objectives as stated in page 38 were accomplished. The stated goal, however,
mentions an information system 'affordable' and 'applicable to East African districts', and there
was awareness that affordability is uncertain with regard to some proposed components,
particularly with continued economic decline accompanied with severe budgetary constraints.
Efforts to minimise costs could be made, but research-related costs, e.g. for computerised data processing, were high. It was difficult to estimate the costs of an integrated research-free information system as proposed in this finding, and there were no estimates available at all costs of the existing information system. It was, however, considered possible, but still uncertain, that the proposed information components, once the research elements are removed will be affordable with some assistance from local communities with data collection and with some revenue from cost-sharing becoming available.

The degree of applicability can only be determined practically by monitoring a revised system closely over a number of years. This is the purpose of a new project which was developed as a continuation project designed to answer this question.

REFERENCES


ANNEX I

INTEGRATED DISTRICT DIAGNOSIS HEALTH FACILITY
DESCRIPTIVE STUDY FORM

INTERVIEWER ________________________________

DATE OF INTERVIEW (DDMMYY) ________________________

1. NAME OF DISTRICT ________________________________

2. SUBLOCATION ______________________________________

3. NAME OF HEALTH FACILITY ________________________________

4. OWNERSHIP OF HEALTH FACILITY:
   1. GOVERNMENT
   2. NGO/MISSION
   3. NGO/OTHER
   4. PRIVATE
   5. OTHER (SPECIFY) ________________________

5. SIZE OF LAND/PLCT OWNED BY THE HEALTH FACILITY, IN SQUARE METRES
   (1 ACRE = 4000 SQ METRES) ________________________________

6. POPULATION IN "THE CATCHMENT AREA" OF THE HEALTH FACILITY:

Instructions: Identify (on a map or otherwise) the geographical area from which almost all patients are coming. Then estimate the total number of people living in that area. If in doubt, seek advice from other district or division offices.

TOTAL NUMBER OF PEOPLE LIVING IN THE CATCHMENT AREA: ________________________

(Best possible estimate)

BASIS FOR ESTIMATE ________________________________

______________________________

______________________________
### 7. BUILDINGS BLOCKS/WARDS AND THEIR CHARACTERISTICS:

<table>
<thead>
<tr>
<th>Block/Ward</th>
<th>Approx. size in sq metres</th>
<th>Approx. age in years</th>
<th>Functional condition*</th>
<th>Repair needs**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ward</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OPD</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MCH (if separate)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TU (if separate)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male Surgical</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male Medical</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female Medical</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pediatric</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TB</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maternity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Classify functional condition as ‘good’, ‘fair’ or ‘poor’. **Classify repair needs as ‘none’, ‘minor’ or ‘major’. One big step is about one metre.

**Comments**

---

### 8. SOURCES OF ENERGY AT THE HEALTH FACILITY:

1. GENERATOR
2. MAINS
3. KEROSENE
4. WOOD/CHARCOAL
5. GENERATOR/MAINs
6. GENERATOR/KEROSENE
7. GENERATOR/WOOD (CHARCOAL)
8. MAINS/KEROSENE
9. MAINS/WOOD/CHARCOAL
10. KEROSENE/WOOD/CHARCOAL
11. OTHER (Specify)

---

### 9. WHAT MEANS OF COMMUNICATION DOES THE HEALTH FACILITY USE WITH MOH/IHQ’s OR DISTRICT ADMINISTRATION OR THE OTHER INSTITUTIONS?

1. TELEPHONE
2. TWO WAY RADIO
3. TEL/FAX
4. 1 AND 2
5. 1 AND 3
6. 2 AND 3
7. 1, 2, 3
8. OTHER (Specify)

---

### 10. IS ALL-WEATHER ROAD TRANSPORT AVAILABLE TO THE NEAREST REFERRAL INSTITUTION?

1. YES
2. NO
11. BED CAPACITY

<table>
<thead>
<tr>
<th>Ward</th>
<th>Number of Beds</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Nyayo Ward</td>
<td></td>
</tr>
<tr>
<td>2. Paediatric Ward</td>
<td></td>
</tr>
<tr>
<td>3. Female Surgical Ward</td>
<td></td>
</tr>
<tr>
<td>4. Female Medical Ward</td>
<td></td>
</tr>
<tr>
<td>5. Male Surgical Ward</td>
<td></td>
</tr>
<tr>
<td>6. Male Medical Ward</td>
<td></td>
</tr>
<tr>
<td>7. Maternity Ward (beds not cols)</td>
<td></td>
</tr>
<tr>
<td>8. TB Ward</td>
<td></td>
</tr>
<tr>
<td>9. Other Inpatient Care Ward</td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td></td>
</tr>
</tbody>
</table>

12. MANPOWER

<table>
<thead>
<tr>
<th>Category</th>
<th>Number of Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Doctors</td>
<td></td>
</tr>
<tr>
<td>2. Dentists</td>
<td></td>
</tr>
<tr>
<td>3. Clinical Officers</td>
<td></td>
</tr>
<tr>
<td>4. Registered Nurses</td>
<td></td>
</tr>
<tr>
<td>5. Public Health Nurses</td>
<td></td>
</tr>
<tr>
<td>6. Pharmacists</td>
<td></td>
</tr>
<tr>
<td>7. Radiographers</td>
<td></td>
</tr>
<tr>
<td>8. Laboratory Technologists</td>
<td></td>
</tr>
<tr>
<td>9. Laboratory Technicians</td>
<td></td>
</tr>
<tr>
<td>10. Health Education Officers</td>
<td></td>
</tr>
<tr>
<td>11. Physiotherapists</td>
<td></td>
</tr>
<tr>
<td>12. Dental Technologists</td>
<td></td>
</tr>
<tr>
<td>13. Enrolled Community Nurses</td>
<td></td>
</tr>
<tr>
<td>14. Enrolled Midwives</td>
<td></td>
</tr>
<tr>
<td>15. Public Health Officers</td>
<td></td>
</tr>
<tr>
<td>16. Public Health Technicians</td>
<td></td>
</tr>
<tr>
<td>17. Family Health Field Educates</td>
<td></td>
</tr>
<tr>
<td>18. Nutrition Field Workers</td>
<td></td>
</tr>
<tr>
<td>19. Other Support Staff</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
</tr>
</tbody>
</table>

13. POST-BASIC TRAINING RECEIVED BY SELECTED STAFF DURING THE LAST 3 YEARS

(enter duration in weeks for each course)

<table>
<thead>
<tr>
<th>Staff Member (Category)</th>
<th>General Refresher</th>
<th>Family Planning</th>
<th>Essential Drugs</th>
<th>EPI</th>
<th>Others (Specify)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
14. FOR EQUIPMENT LISTED BELOW PLEASE STATE NUMBER & FUNCTIONAL CONDITION

<table>
<thead>
<tr>
<th>Type of Equipment</th>
<th>Number</th>
<th>Functional Condition*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Cat</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Motorcycle</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. X-ray-machine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Microscope</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Refrigerator</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Autoclave</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Anaesthesia Machine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Operation Lamp</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Standby Generator</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Blood Pressure Machine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Auscoppe</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Ophthalmoscope</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Centhage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. Dental Chair Unit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. Vaginal Speculum</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. Forceps (delivery)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17. Stethoscope</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. Delivery Set</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19. Vacuum Extractor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20. Minor Surgery Set</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21. Dental Extraction Set</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22. Water Supply/Sanitation Tools</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

State good, fair, poor or not working.

15. IS THERE A BASIC SET OF REFERENCE BOOKS AVAILABLE TO STAFF? ☐

1. YES  2. NO

COMMENTS: ____________________________

16. FOR SUPPLIES LISTED BELOW, STATE AVAILABILITY

<table>
<thead>
<tr>
<th>Item</th>
<th>Never available</th>
<th>Rarely available</th>
<th>Usually available</th>
<th>Always available</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Water</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Electrode</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Petrol</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Stationery</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. X-ray films</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. X-ray developer</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Essential Drugs Kit I</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Essential Drugs Kit II</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Vaccines</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Laboratory reagents</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Rubber gloves</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Suture material</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Gauze dressing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. Cement, pipe, iron bars, etc.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. Others (specify)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
17. WHAT WERE THE ANNUAL RECURRENT BUDGET AND THE ACTUAL EXPENDITURE FOR THIS HEALTH FACILITY DURING THE LAST FEW YEARS?

<table>
<thead>
<tr>
<th>Recurrent Budget Item</th>
<th>Actual Expenditure</th>
<th>Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Salaries</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Allowances</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Transport</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Travel &amp; Accommodation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Drugs and Medical Supplies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Food</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Stationery</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Vehicle Replacement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Equipment Purchase</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Maintenance Plant and Equipment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Maintenance Buildings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Miscellaneous</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

18. ACTUAL CAPITAL (DEVELOPMENT) BUDGET AND ACTUAL EXPENDITURE FOR THIS HEALTH FACILITY DURING THE LAST FEW YEARS?

<table>
<thead>
<tr>
<th>Recurrent Budget Item</th>
<th>Actual Expenditure</th>
<th>Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

19. STATE NUMBER OF IMMUNIZATIONS IN PREVIOUS YEAR (1988) INCLUDING MOBILE OUTREACH

a) Children

<table>
<thead>
<tr>
<th>Immunization</th>
<th>Under 1 year</th>
<th>1-5 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCG</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DTP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OPV</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measles</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IPV</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HEP</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Immunization

<table>
<thead>
<tr>
<th>Immunization</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetanus Toxoid 1</td>
<td></td>
</tr>
<tr>
<td>Tetanus Toxoid 2</td>
<td></td>
</tr>
<tr>
<td>Booster</td>
<td></td>
</tr>
<tr>
<td>Others (specify)</td>
<td></td>
</tr>
</tbody>
</table>

### ENVIRONMENTAL SANITATION

PLEASE INSERT ✓ WHEN APPLICABLE

20. WATER SUPPLY SOURCES

<table>
<thead>
<tr>
<th>Source</th>
<th>SANITARY</th>
<th>INSANITARY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Piped water supply</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Well, protected</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spring, protected</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roof catchment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Well, unprotected</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spring, unprotected</td>
<td></td>
<td></td>
</tr>
<tr>
<td>River, lake</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pond or dam</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other (Specify)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

21. TYPE OF TOILET

<table>
<thead>
<tr>
<th>Type</th>
<th>SANITARY</th>
<th>INSANITARY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ordinary pit latrine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VIP latrine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pour flush latrine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flush</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) Septic Tank</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b) cess pool</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c) Open sewer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bucket latrine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

22. WASTE WATER DRAINAGE

<table>
<thead>
<tr>
<th>Type</th>
<th>SANITARY</th>
<th>INSANITARY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Septagage pit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Open drain</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waste stabilization pond</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others (Specify)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

23. REFUSE DISPOSAL TYPE

<table>
<thead>
<tr>
<th>Type</th>
<th>SANITARY</th>
<th>INSANITARY</th>
</tr>
</thead>
<tbody>
<tr>
<td>On open ground</td>
<td></td>
<td></td>
</tr>
<tr>
<td>In refuse pit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incineration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public refuse collection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others (Specify)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## ANNUAL SERVICE OUTPUT FOR PREVIOUS YEAR (1993)

### 24. OUTPATIENTS

<table>
<thead>
<tr>
<th></th>
<th>NEW PATIENTS</th>
<th>REVISITS</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>MALES ALL AGES</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FEMALES ALL AGES</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 25. IN-PATIENTS

<table>
<thead>
<tr>
<th></th>
<th>NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL ADMISSIONS</td>
<td></td>
</tr>
<tr>
<td>TOTAL DISCHARGES</td>
<td></td>
</tr>
<tr>
<td>TOTAL DEATHS</td>
<td></td>
</tr>
<tr>
<td>MAJOR OPERATIONS</td>
<td></td>
</tr>
<tr>
<td>MINOR OPERATIONS</td>
<td></td>
</tr>
</tbody>
</table>

### 26. LABORATORY TESTS (IN- AND OUTPATIENTS)

<table>
<thead>
<tr>
<th>Test Type</th>
<th>NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>MALAIA BLOOD SLIDE</td>
<td></td>
</tr>
<tr>
<td>OTHER BLOOD TEST</td>
<td></td>
</tr>
<tr>
<td>STOOL TEST</td>
<td></td>
</tr>
<tr>
<td>UIRINARY TEST</td>
<td></td>
</tr>
<tr>
<td>SPUTUM TEST FOR TB</td>
<td></td>
</tr>
<tr>
<td>OTHER (ST+/TA)</td>
<td></td>
</tr>
</tbody>
</table>

### 27. REFERRALS

<table>
<thead>
<tr>
<th>Type</th>
<th>NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>REFERRALS OUTGOING</td>
<td></td>
</tr>
<tr>
<td>REFERRALS INCOMING</td>
<td></td>
</tr>
</tbody>
</table>

### 28. MATERNITY UNIT

<table>
<thead>
<tr>
<th>Type</th>
<th>NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADMISSIONS</td>
<td></td>
</tr>
<tr>
<td>DELIVERIES NORMAL</td>
<td></td>
</tr>
<tr>
<td>DELIVERIES COMPLICATED</td>
<td></td>
</tr>
<tr>
<td>STILL BIRTHS</td>
<td></td>
</tr>
</tbody>
</table>

### 29. MCH/FP

<table>
<thead>
<tr>
<th>Type</th>
<th>NEW PATIENTS</th>
<th>REVISITS</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHILD WELFARE UNDER 5 CLINIC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FAMILY PLANNING CLINIC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ANTENATAL CLINIC</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 30. OUTREACH

<table>
<thead>
<tr>
<th>Type</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROGRAMME AVAILABLE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NUMBER OF TRIPS/WEEK</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 31. LIST SUPERVISING VISITS TO YOUR HEALTH FACILITY DURING THE LAST 12 MONTHS

<table>
<thead>
<tr>
<th>Date</th>
<th>Name and Designation of Supervisor</th>
<th>Purpose of Visit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
32. NUMBER OF ACTIVE CHWs AND OF TRAINED TBAs IN THE AREA UNDER YOUR SUPERVISION

CHWs

Train TBAs

33. PLEASE STATE WHETHER THE FOLLOWING ACTIVITIES HAVE BEEN CARRIED OUT IN THE PREVIOUS YEAR.

<table>
<thead>
<tr>
<th>Survey or Special Studies</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaluation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Staff Meetings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Village Committee Meetings</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

34. TEN MOST COMMON MAJOR SURGICAL OPERATIONS (IF ANY) DURING 1988

<table>
<thead>
<tr>
<th>Kind of Operation</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

35. THE TEN MOST COMMON MINOR SURGICAL OPERATIONS (IF ANY) DURING 1988

<table>
<thead>
<tr>
<th>Kind of Operation</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

36. PLEASE LIST THE TOP TEN OUTPATIENT DIAGNOSES IN 1988

<table>
<thead>
<tr>
<th>Disease/Diagnosis</th>
<th>Number of New Visits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stressful Diagnoses</th>
<th>Number of Diagnoses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

ADMINISTRATION/MANAGEMENT

38. PLEASE STATE (BY TICKING) WHETHER THE FACILITY ADMINISTRATION OR THE AUTHORITY DO THE FOLLOWING:

A. HIRE STAFF  
B. FIRE STAFF  
C. TRANSFER STAFF  
D. REALLOCATE BUDGET  
E. INITIATE NEW PROGRAMMES

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
<th>DON'T KNOW</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

39. DO YOU PARTICIPATE IN HEALTH PLANNING AND BUDGETING WITHIN THE DISTRICT?

1. YES  
2. NO

IF SO, HOW?

__________________________
__________________________

40. PLEASE INDICATE WHETHER YOUR HEALTH FACILITY HAS THE FOLLOWING:

A. ORGANIZATION ORGANIZATION CHART  
B. WRITTEN PLANS  
C. STAFF DUTY ROSTER  
D. WEEKLY ACTIVITY SCHEDULE  
E. JOB DESCRIPTIONS FOR TECHNICAL STAFF

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
<th>DON'T KNOW</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

COMMENTS:

__________________________
__________________________
__________________________
__________________________
__________________________

41. STATE FIVE MAIN PROBLEMS THAT YOUR HEALTH FACILITY FACES:

1. ____________________________________________
2. ____________________________________________
3. ____________________________________________
4. ____________________________________________
5. ____________________________________________
**ANNEX II**

**INTEGRATED DISTRICT DIAGNOSIS PROJECT**
**KIBEWE CROSS-SECTION SURVEY II**
**HOUSEHOLD QUESTIONNAIRE**

**RESPONDENT IDENTIFICATION:**

<table>
<thead>
<tr>
<th>1. HOUSEHOLD NUMBER</th>
<th>CODE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. VILLAGE NAME</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3. SUBLOCATION NAME</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RESPONDENT'S NAME</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**STATUS OF THE QUESTIONNAIRE:**

DATE OF THE INTERVIEW: ______________

INTERVIEWER'S NAME AND CODE: ____________________________

**COMPLETENESS AND CONSISTENCY CHECKED**

BY: ____________________________ DATE: ______________

CODED BY: ____________________________ DATE: ______________

VERIFIED BY: ____________________________ DATE: ______________

______________________________________

73
### TABLE 3: INFORMATION ON HOUSEHOLD MEMBERS

I WOULD LIKE TO KNOW HOW MANY PEOPLE LIVE AND EAT TOGETHER IN THIS HOUSEHOLD. PLEASE GIVE ME THE FOLLOWING INFORMATION ON THE FAMILY MEMBERS STARTING WITH THE HOUSEHOLD HEAD.

<table>
<thead>
<tr>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Same No. of household members</td>
<td>Name of Household Member</td>
<td>Relation to Household Head</td>
<td>Ser</td>
<td>M</td>
<td>F</td>
<td>Age in Years</td>
<td>Marital Status</td>
<td>Highest grade completed in school (Std IV, Form IV, etc.)</td>
</tr>
<tr>
<td>01</td>
<td>02</td>
<td>03</td>
<td>04</td>
<td>05</td>
<td>06</td>
<td>07</td>
<td>08</td>
<td>09</td>
</tr>
<tr>
<td>10</td>
<td>11</td>
<td>12</td>
<td>13</td>
<td>14</td>
<td>15</td>
<td>16</td>
<td>17</td>
<td>18</td>
</tr>
</tbody>
</table>

**HOUSEHOLD (Main living quarter)**

1. Main house roof:
   1. Thatch
   2. Iron Sheets
   3. Other (specify)

14. Is roof in good condition? (No leaks, well maintained):
   1. Yes
   2. No

15. Main house walls
   1. Dirt
   2. Sheet - good condition
   3. Sheet - poor condition
   4. Stone
   5. Wood
   6. Other (specify)
16. Main house - number of rooms: 

17. Kitchen/cooking place location:
1. Inside main house
2. In separate building

18. If separate building: condition of walls
1. Dirt
2. Sweatered - good condition
3. Sweatered - poor condition
4. Stone
5. Wooden
6. Other (specify) 

19. Latrine available
1. YES
2. NO

23. If yes: state of cleanliness of latrine (Please check and confirm from observation)
1. Clean
2. Dirty

21. How often do adult household members use the latrine?
1. Always
2. Sometimes
3. Never

22. How often, if at all, do children under five years use the latrine?
1. Always
2. Sometimes
3. Never

23. a) Type of latrine slab
1. Concrete
2. Wood
3. Earth over wood
4. Other (specify)

24. How do you dispose of your refuse?

25. Rank your three most commonly used sources of water during dry season: (1. Most commonly used, 2. Moderately used, 3. Least commonly used)
1. Piped in house or compound
2. Own protected well
3. Roof catchment
4. Shared protected well
5. Shared public stand pipe
6. Protected spring
7. Purchased from vendor
8. Unprotected well
9. Unprotected spring
10. River, dam
11. Other (specify)

26. Rank your three most commonly used sources of water during the wet season (1. Most commonly used, 2. Moderately used, 3. Least commonly used)

<table>
<thead>
<tr>
<th>Rank 1-3</th>
<th>1. Piped in house or in compound</th>
<th>2. Own protected well</th>
<th>3. Roof catchment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4. Shared protected well</td>
<td>5. Shared public stand pipe</td>
<td>6. Protected spring</td>
</tr>
<tr>
<td></td>
<td>10. River, pond, dam</td>
<td></td>
<td>11. Other (specify)</td>
</tr>
</tbody>
</table>

27. Distance to main source of water
1. Less than 0.5 km
2. About 0.5 km
3. About 1 km
4. About 2 km
5. 3 km or more

28. How much time (in minutes) does the round trip to the nearest water source usually take for an adult during the dry season?
1. 30 minutes or less
2. More than 30 minutes but less than 1 hr
3. At least 1 hr but less than 2 hr
4. 2 hr or over

29. How much time (in minutes) does the round trip to the nearest water source usually take for an adult during the wet season?
1. 30 minutes or less
2. More than 30 minutes but less than 1 hr
3. At least 1 hour but less than 2 hr
4. 2 hr or over

30. How do you draw water from the most common source during the dry season?
1. Pump
2. Bucket
3. Trough
4. Tin
5. Other (specify)

31. How do you draw water from the most common source during the wet season?
1. Pump
2. Bucket
3. Trough
4. Tin
5. Other (specify)

32. Total number of jerricans of water used by all household members on a typical (average) day: __________
35. How is the drinking water stored?
1. Plastic drum
2. Metal drum
3. Earthen ware jar
4. Plastic debe
5. Calabash
6. Other (specify)

34. Are the storage containers covered?
1. All
2. Some
3. None

35. How is the water dispensed from the storage container?
1. Tap
2. Special cup
3. Any cup
4. Tin
5. Other (specify)

ILLNESS, INJURIES AND HEALTH CARE UTILIZATION

36. Has anybody been ill or injured in this household in the last 30 days from today?
1. YES
2. NO
If yes, please provide information below:

<table>
<thead>
<tr>
<th>Serial No.</th>
<th>Person's Name</th>
<th>Date illness started</th>
<th>How many days ill</th>
<th>How many illness symptoms</th>
<th>Perception seriousness of illness</th>
<th>Where did the ill person seek care?</th>
</tr>
</thead>
<tbody>
<tr>
<td>37</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>38</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>39</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>41</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>42</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>43</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>44</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>45</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Action taken
   1. No treatment
   2. Medication only
   3. Shop medicines
   4. Medication and surgical operation
   5. Other (specify)
46. Has any member of this household been admitted as an in-patient in any hospital during the last 12 months?  
1. YES  2. NO
If yes, please provide the following information:

<table>
<thead>
<tr>
<th>Serial No.</th>
<th>Name of person</th>
<th>Reason for admission</th>
<th>Name of hospital</th>
<th>When (Month)</th>
<th>Outcome of hospital</th>
<th>In case of referral to hospital</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1. Serious illness</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Major surgery</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Complex Investigation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Referral to Inpatient</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>5. Other (specify)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

53. Has any member of this household undergone surgical operation during the last 12 months?  
1. YES  2. NO
If yes, please provide the following information:

<table>
<thead>
<tr>
<th>Serial No.</th>
<th>Name of Person</th>
<th>Condition requiring operation</th>
<th>Type of operation</th>
<th>Name of institution</th>
<th>When was the operation done</th>
<th>Outcome</th>
<th>In case of referral to hospital</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
62. Is there anybody in your household who has long-lasting illness or permanent disability (such as difficulty to move arm or leg, to see, to hear, to learn, having epilepsy, fits or shows strange behaviour)?
   1. YES  2. NO

If yes, please provide the following information:

<table>
<thead>
<tr>
<th>Serial No</th>
<th>Name of household member</th>
<th>Illness symptoms or type of disability (See below)</th>
<th>Degree of disability 1. High 2. Medium 3. Low</th>
<th>T&amp;D-disabled since when (Year)</th>
<th>Action taken so far</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Interviewers: Please find out whether there is any member of the household:
1. Who has difficulty moving arm, leg, or etc.?  
2. Who has difficulty seeing?  
3. Who has difficulty hearing/speaking?  
4. Who has difficulty learning?  
5. Who gets fits?  
6. Who shows strange behaviour?  
7. Others (specify)  

68. Has any member of this household died during the last 12 months?
   1. YES  2. NO

69. If yes,
   (a) who:  
   (b) which month?

70. Cause of death—give the following details:
   Disease, injury or other condition directly leading to death:

Underlying causes:
   State conditions, if any, contributing to the above.
## IMMUNIZATION STATUS (CHILDREN UNDER 5 YEARS)

71. Card availability:
   1. YES  2. NO
   If yes, please provide the following information:

<table>
<thead>
<tr>
<th>Number</th>
<th>Child's Name</th>
<th>BCG</th>
<th>DPT</th>
<th>Measles</th>
<th>Polio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>

FOR OFFICIAL USE: Frequency of households

## NUTRITION (CHILDREN UNDER 5 YEARS = 60 MONTHS)

<table>
<thead>
<tr>
<th>Serial Number</th>
<th>Child's name</th>
<th>Age in months</th>
<th>Weight in grams</th>
<th>Height in cm</th>
<th>Arm circumference cm</th>
</tr>
</thead>
</table>

## Source of Income

<table>
<thead>
<tr>
<th>Source of Income</th>
<th>Household Member No.</th>
<th>All Other Household Members</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 2 3 4 5</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>1. Sale of livestock</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Sale of crops</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Wage employment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Salary</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. House-rent</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Other family business</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Remittances</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Possessions stated:

85. Domestic animals:

<table>
<thead>
<tr>
<th>Animal</th>
<th>No.</th>
<th>Value (KShs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cows</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oxen</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goats</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sheep</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chicken</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Donkey</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others (specify)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

86. Possessions observed:

<table>
<thead>
<tr>
<th>Item</th>
<th>No.</th>
<th>Value (KShs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bicycle</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Animal-drawn cart</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oxen-plough</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Radio</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others (specify)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

FOR OFFICIAL USE:
Socio-economic category:  
High _______ Medium _______ Low _______

87. What in your opinion are the four commonest diseases affecting adults 18 years and above in your area?

1. 
2. 
3. 
4. 

88. What in your opinion are the four most common conditions causing deaths among adults in your area? (In order of importance)

1. 
2. 
3. 
4. 

89. What are the four commonest diseases affecting children under five years in your area? (By priority listing)

1. 
2. 
3. 
4. 
90. (a) Which four diseases would you say kill most children under five years in your area?

1. [Blank]
2. [Blank]
3. [Blank]
4. [Blank]

(b) Interviewer: Probe by asking "any other?"

91. Four commonest diseases affecting adults (18 years old and over) in your area (Rank 1 for most common, etc.)

<table>
<thead>
<tr>
<th>Rank</th>
<th>Disease</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Malaria</td>
</tr>
<tr>
<td>2</td>
<td>Respiratory diseases</td>
</tr>
<tr>
<td>3</td>
<td>Tuberculosis (TB)</td>
</tr>
<tr>
<td>4</td>
<td>Urinary tract infections</td>
</tr>
<tr>
<td>5</td>
<td>Malnutrition</td>
</tr>
<tr>
<td>6</td>
<td>Gonorrhea</td>
</tr>
<tr>
<td>7</td>
<td>Accidents</td>
</tr>
<tr>
<td>8</td>
<td>Schistosomiasis</td>
</tr>
<tr>
<td>9</td>
<td>Intestinal worms</td>
</tr>
<tr>
<td>10</td>
<td>Abscesses/wounds</td>
</tr>
<tr>
<td>11</td>
<td>Diseases of the skin</td>
</tr>
<tr>
<td>12</td>
<td>Eye infections</td>
</tr>
<tr>
<td>13</td>
<td>Ear infections</td>
</tr>
<tr>
<td>14</td>
<td>Diarrhoeal diseases</td>
</tr>
<tr>
<td>15</td>
<td>Complicated childbirths</td>
</tr>
<tr>
<td>16</td>
<td>Mental illnesses</td>
</tr>
<tr>
<td>17</td>
<td>Other (specify)</td>
</tr>
</tbody>
</table>

92. Which four diseases do you think kill most adults (18 years and over) in your area (indicate most common killer diseases with !, etc.)

<table>
<thead>
<tr>
<th>Rank</th>
<th>Disease</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Malana</td>
</tr>
<tr>
<td>2</td>
<td>Respiratory diseases</td>
</tr>
<tr>
<td>3</td>
<td>Urinary tract infections</td>
</tr>
<tr>
<td>4</td>
<td>Malnutrition</td>
</tr>
<tr>
<td>5</td>
<td>Gonorrhea</td>
</tr>
<tr>
<td>6</td>
<td>Accidents</td>
</tr>
<tr>
<td>7</td>
<td>Schistosomiasis (bilharzia)</td>
</tr>
<tr>
<td>8</td>
<td>Intestinal worms</td>
</tr>
<tr>
<td>9</td>
<td>Diarrhoeal diseases</td>
</tr>
<tr>
<td>10</td>
<td>Cancer</td>
</tr>
<tr>
<td>11</td>
<td>AIDS</td>
</tr>
<tr>
<td>12</td>
<td>Complicated childbirths</td>
</tr>
<tr>
<td>13</td>
<td>Other (specify)</td>
</tr>
</tbody>
</table>

93. What do you think are the four commonest diseases affecting children (under 5 years) in your area (Rank 1 for most common etc.)

<table>
<thead>
<tr>
<th>Rank</th>
<th>Disease</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Malaria</td>
</tr>
<tr>
<td>2</td>
<td>Measles</td>
</tr>
<tr>
<td>3</td>
<td>Polio</td>
</tr>
<tr>
<td>4</td>
<td>Malnutrition</td>
</tr>
<tr>
<td>5</td>
<td>Cerebro-spinal fever</td>
</tr>
<tr>
<td>6</td>
<td>WHOoping cough</td>
</tr>
<tr>
<td>7</td>
<td>Diarrhoea</td>
</tr>
<tr>
<td>8</td>
<td>Vomiting</td>
</tr>
<tr>
<td>9</td>
<td>Others (specify)</td>
</tr>
</tbody>
</table>
94. Which four diseases do you think kill most children under 5 in your area? (Rank 1 for most common, etc.)

1. Malaria
2. Measles
3. Polio
4. Malnutrition
5. Cerebro-spinal fever
6. Whooping cough
7. Diarrhoea
8. Others (specify)
ANNEX III

INTEGRATED DISTRICT DIAGNOSIS PROJECT
LONGITUDINAL SURVEY: ILLNESS EPISODE REPORT

1. Date

2. Interviewer No.

3. Village

4. Household No.

5. Person Ill. Name
   Serial No.
   Parent occupation
   Average number of working hours/day

6. Symptoms as they developed during the latest 2 week period.
   At first:
   Then:
   Main symptoms

7. Date (as precisely as possible) when illness began

8. If the illness has come to an end: which date?

9. Did the illness restrict usual activities?
   1. YES
   2. NO

10. If yes:
    Totally restricted for how many days?
    Partly restricted for how many days?

    [FOR OFFICIAL USE: Total period of restriction]

11. Did you suffer from pain or other discomfort?
    1. No
    2. Slight
    3. Moderate
    4. Severe

85
12. Did you consider the illness to be serious?  
1. Not serious  
2. Moderately serious  
3. Very serious  
4. Don't know

13. What would you say was (is) the cause of the illness?

14. What did you do about the illness during these two weeks?  

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Stayed at home, sought no help from outside?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Sought advice from within the family?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Sought advice from friends?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Sought advice from traditional healer?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Used traditional medicines?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Sought care at clinic or hospital?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>If yes: which clinic/hospital?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Action taken at clinic/hospital?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. None</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Admission as inpatient</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Drugs given as outpatient</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Drugs prescribed but not given</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Others (specify)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

15. Was any surgical operation done? 1. YES 2. NO [ ]  
If yes: specify type of operation

16. How much cash in total did you pay for the treatment of this illness in the last two weeks?  

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Kshs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Consultation</td>
<td></td>
</tr>
<tr>
<td>2. Drugs</td>
<td></td>
</tr>
<tr>
<td>3. Transport</td>
<td></td>
</tr>
<tr>
<td>4. Laboratory tests</td>
<td></td>
</tr>
<tr>
<td>5. Admission</td>
<td></td>
</tr>
<tr>
<td>6. Surgical operation</td>
<td></td>
</tr>
<tr>
<td>7. Other outlays (specify)</td>
<td></td>
</tr>
<tr>
<td>8. Total outlays (specify)</td>
<td></td>
</tr>
</tbody>
</table>

17. What payments or kind did you incur for this illness in the last two weeks? (specify).  

FOR OFFICIAL USE: estimate of value in KShs.  

__________________________________________
18. If you did not seek care at any clinic or hospital please answer yes or no to the following:

1. Clinic far away
2. Transport too expensive
3. Charges and fees too high
4. Clinic care unnecessary
5. Clinic care ineffective
6. Unpleasant examinations and tests
7. Afraid of possible treatment procedures
8. Spouse objecting visit to clinic
9. Clinic staff rude or unfriendly
10. Other reasons (specify)

19. Other comments in relation to the illness/injury

FOR OFFICIAL USE ONLY:
20. Medical assessment by ____________________________ (Name)
   1. Most likely diagnosis

2. Disease Code: [ ]


21. Validation Team Assessment:
   1. Most likely diagnosis

2. Disease Code: [ ]


Name of Assessor: ____________________________

Date: ____________________________
ANNEX IV

INTEGRATED DISTRICT DIAGNOSIS PROJECT
KIBWEZI DIVISION
DELPHI PANEL QUESTIONNAIRE

INTRODUCTION
We are looking for ways in which information generated from the members of the community can assist the government in planning our health services. At this stage we are interviewing those people whom we consider well versed in what is happening locally. You are one of the 26 people in Kibwezi Division we are requesting to assist us in our efforts to improve our health services.

The process will be as follows: I shall interview you to record your opinion on some of the important health issues in your community. There shall be three rounds of interviewing. During every interview, I shall inform you about the overall opinion of majority of other panel members in this study. The whole exercise might last the whole month to complete. I therefore wish to request you to be patient during the exercise. So feel free to ask me any question before we begin.

RESPONDENT’S IDENTIFICATIONS:

1. MEMBER’S NAME: ____________________________ CODE: __________

2. VILLAGE NAME: ____________________________ CODE: __________

STATUS OF THE QUESTIONNAIRE

3. DATE OF INTERVIEW: ________________________

4. INTERVIEWER’S NAME: ________________________
WATER AND SANITATION

5. What proportion of households in your area have latrines?

<table>
<thead>
<tr>
<th></th>
<th>First Round</th>
<th>Second Round</th>
<th>Third Round</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. About quarter</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. About half</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. About three-quarters</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Above three-quarters</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

6. How do majority of households in your area dispose of refuse?

<table>
<thead>
<tr>
<th></th>
<th>First Round</th>
<th>Second Round</th>
<th>Third Round</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Container or bin</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Composting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Burning</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Throw away (no system)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Other (specify)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

7. Rank the three most common sources of water by season:

<table>
<thead>
<tr>
<th></th>
<th>Dry</th>
<th>Wet</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Piped in house or in compound</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>2. Own protected well</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>3. Roof catchment</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>4. Shared protected well</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Shared public stand pipe</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Protected spring</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Unprotected well</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Unprotected spring</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. River, dam</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Others (specify)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

8. How do majority of households draw water from the most common source by season?

<table>
<thead>
<tr>
<th></th>
<th>Dry</th>
<th>Wet</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Pump</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2. Bucket</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3. Trough</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Tin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Others (specify)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# ILLNESS

9. Rank the type of long-lasting illness or permanent disability most common in your area?

<table>
<thead>
<tr>
<th>First</th>
<th>Second</th>
<th>Third</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Problem in moving leg or arm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Problem in seeing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Problem in hearing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Problem in talking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Mental problems</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Fits or epilepsy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Strange behaviour</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

10. Which are the four commonest diseases affecting adults (18 years and over) in your area? Rank as 1 the commonest, etc.

<table>
<thead>
<tr>
<th>First Round</th>
<th>Second Round</th>
<th>Third Round</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

11. Which are the four diseases that you think kill most adults in your area? Indicate ranks as 1, 2, etc.

<table>
<thead>
<tr>
<th>First Round</th>
<th>Second Round</th>
<th>Third Round</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

12. What do you think are the four commonest serious diseases affecting children under 5 years in your area? Rank them:

<table>
<thead>
<tr>
<th>First Round</th>
<th>Second Round</th>
<th>Third Round</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

13. What do you think are the four most frequently recurring diseases affecting children under 5 years amongst households in your area? Disease that recurs at shortest interval given as number one, etc.

<table>
<thead>
<tr>
<th>First Round</th>
<th>Second Round</th>
<th>Third Round</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
14. Which four diseases do you think kill most children under 5 years in your area?

<table>
<thead>
<tr>
<th>First Round</th>
<th>Second Round</th>
<th>Third Round</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

15. What are the four most common diseases/health problems affecting elderly people in your area?

<table>
<thead>
<tr>
<th>First Round</th>
<th>Second Round</th>
<th>Third Round</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

16. Give examples of illnesses you consider usually trivial and don't need to bother about?

<table>
<thead>
<tr>
<th>First Round</th>
<th>Second Round</th>
<th>Third Round</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

17. What do people believe to be the main cause of disease?

<table>
<thead>
<tr>
<th>First Round</th>
<th>Second Round</th>
<th>Third Round</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**MCH STATUS**

18. What proportion of pregnant women in your area attend ante-natal clinic?

<table>
<thead>
<tr>
<th>First Round</th>
<th>Second Round</th>
<th>Third Round</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Less than a quarter</th>
<th>About half</th>
<th>More than half but not all</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
19. What proportion of children are currently immunized in your area?

<table>
<thead>
<tr>
<th></th>
<th>First Round</th>
<th>Second Round</th>
<th>Third Round</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Less than a quarter</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. About half</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. More than half but not all</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. All</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

20. What proportion of children under 5 years suffer from Malnutrition in your area?

<table>
<thead>
<tr>
<th></th>
<th>First Round</th>
<th>Second Round</th>
<th>Third Round</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Less than a quarter</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. About half</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. More than half but not all</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. All</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

OTHER HEALTH PROBLEMS

21. Do you expect people’s health to improve, deteriorate or remain the same in your location in the next 2-3 years?

<table>
<thead>
<tr>
<th></th>
<th>First Round</th>
<th>Second Round</th>
<th>Third Round</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Improve</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Deteriorate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Remain the same</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

22. Do you expect health care services at the clinics/hospitals to improve, deteriorate or remain the same in the next 2-3 years?

<table>
<thead>
<tr>
<th></th>
<th>First Round</th>
<th>Second Round</th>
<th>Third Round</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Improve</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Deteriorate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Remain the same</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

23. Will people’s use of local traditional healers increase, decline or remain about the same in the next few years?

<table>
<thead>
<tr>
<th></th>
<th>First Round</th>
<th>Second Round</th>
<th>Third Round</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Increase</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Decline</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Remain the same</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

24. Do you think poor people will be willing to pay more in the coming years for health care at health centres and dispensaries if this means better health services?

<table>
<thead>
<tr>
<th></th>
<th>First Round</th>
<th>Second Round</th>
<th>Third Round</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Willing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Unwilling</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Remain the same</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
ANNEX V

INTEGRATED DISTRICT DIAGNOSIS PROJECT
KIBWEZI SOCIO-CULTURAL SURVEY
HOUSEHOLD QUESTIONNAIRE

RESPONDENT IDENTIFICATION:
1. NAME
2. POSITION IN HOUSEHOLD
3. HOUSEHOLD NUMBER
4. VILLAGE NAME
5. NEAREST HEALTH FACILITY
6. SUBLOCATION

STATUS OF THE QUESTIONNAIRE:
7. DATE OF THE INTERVIEW:
8. INTERVIEWER'S NAME AND CODE

9. CONSISTENCY CHECKED BY DATE
10. CODED BY DATE
11. VERIFIED BY DATE
SOCIO-CULTURAL SURVEY INSTRUMENTS—KIBWEZI

12. Please tell us beliefs associated with the following diseases/conditions:

a) Diarrhoea in adults

<table>
<thead>
<tr>
<th>Cause:</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Effect (outcome):</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Management (treatment):</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Prevention:</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

b) Measles

<table>
<thead>
<tr>
<th>Cause:</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Effect (outcome):</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Management (treatment):</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prevention:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>c) Gonorrhea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cause:</td>
</tr>
<tr>
<td>1.</td>
</tr>
<tr>
<td>2.</td>
</tr>
<tr>
<td>3.</td>
</tr>
<tr>
<td>4.</td>
</tr>
<tr>
<td>Effect (outcome):</td>
</tr>
<tr>
<td>1.</td>
</tr>
<tr>
<td>2.</td>
</tr>
<tr>
<td>3.</td>
</tr>
<tr>
<td>4.</td>
</tr>
<tr>
<td>Management (treatment):</td>
</tr>
<tr>
<td>1.</td>
</tr>
<tr>
<td>2.</td>
</tr>
<tr>
<td>3.</td>
</tr>
<tr>
<td>4.</td>
</tr>
<tr>
<td>Prevention:</td>
</tr>
<tr>
<td>1.</td>
</tr>
<tr>
<td>2.</td>
</tr>
<tr>
<td>3.</td>
</tr>
<tr>
<td>4.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>d) Leprosy:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cause:</td>
</tr>
<tr>
<td>1.</td>
</tr>
<tr>
<td>2.</td>
</tr>
<tr>
<td>3.</td>
</tr>
<tr>
<td>4.</td>
</tr>
<tr>
<td>Effect (outcome):</td>
</tr>
<tr>
<td>1.</td>
</tr>
<tr>
<td>2.</td>
</tr>
<tr>
<td>3.</td>
</tr>
<tr>
<td>4.</td>
</tr>
<tr>
<td>Management (treatment):</td>
</tr>
<tr>
<td>1.</td>
</tr>
<tr>
<td>2.</td>
</tr>
<tr>
<td>3.</td>
</tr>
<tr>
<td>4.</td>
</tr>
</tbody>
</table>
Prevention:
1. ___________________________
2. ___________________________
3. ___________________________
4. ___________________________

e) Pneumonia:
Cause:
1. ___________________________
2. ___________________________
3. ___________________________
4. ___________________________
Effect (outcome):
1. ___________________________
2. ___________________________
3. ___________________________
4. ___________________________
Management (treatment):
1. ___________________________
2. ___________________________
3. ___________________________
4. ___________________________
Prevention:
1. ___________________________
2. ___________________________
3. ___________________________
4. ___________________________

n) Epilepsy:
Cause:
1. ___________________________
2. ___________________________
3. ___________________________
4. ___________________________
Effect (outcome):
1. ___________________________
2. ___________________________
3. ___________________________
4. ___________________________
Management (treatment):
1. ___________________________
2. ___________________________
3. ___________________________
4. ___________________________
### Prevention:
1. 
2. 
3. 
4. 

### Police:
**Cause:**
1. 
2. 
3. 
4. 
**Effect (outcome):**
1. 
2. 
3. 
4. 
**Management (treatment):**
1. 
2. 
3. 
4. 

### Swashbuckler:
**Cause:**
1. 
2. 
3. 
4. 
**Effect (outcome):**
1. 
2. 
3. 
4. 
**Management (treatment):**
1. 
2. 
3. 
4.
## Prevention:
1. 
2. 
3. 
4. 

### i) Lung TB (Tuberculosis)

#### Cause:
1. 
2. 
3. 
4. 

#### Effect (outcome):
1. 
2. 
3. 
4. 

#### Management (treatment):
1. 
2. 
3. 
4. 

### Prevention:
1. 
2. 
3. 
4. 

### j) Teething in children:

#### Cause:
1. 
2. 
3. 
4. 

#### Effect (outcome):
1. 
2. 
3. 
4. 

#### Management (treatment):
1. 
2. 
3. 
4.
Prevention:
1. 
2. 
3. 
4. 

k) Spontaneous abortion:

Cause:
1. 
2. 
3. 
4. 

Effect (outcome):
1. 
2. 
3. 
4. 

Management (treatment):
1. 
2. 
3. 
4. 

Prevention:
1. 
2. 
3. 
4. 

13. What cultural ceremonies/activities are conducted when the following occur.

a) Child birth:
1. Child remains in house for 3 days
2. Father provides beer for men
3. Father provides food for women
4. Woman stays 3 days without shower
5. Relative fetches water for washing child after 3 days
6. None of the above
7. Others (Specify)

b) Teenage pregnancy:
1. Cleansing ceremony after delivery
2. Old man sent to parents of boy responsible
3. Compensation must be paid
4. Goat soup must be taken on delivery
5. None of the above
6. Others (specify)

c) Mental illness:
1. Ritual dance to chase spirits
2. Calling medicine man
3. None of the above
4. Others (specify)

d) Still birth:
1. None
2. Others
3. 
4. 

e) Threatened abortion:
1. None
2. Others
3. 
4. 

14. What is the cause of the following childhood diseases?

a) Diarrhoea:
1. Evil Eye
2. Witchcraft
3. Satan
4. God’s wish
5. Dirty hands
6. Food (indicate type)
7. Water
8. Germs in food or drink
9. Don’t know
10. Normal process of cleansing stomach
11. Others (specify)

b) Measles
1. Food
2. Mixing with other children
3. Don’t know
4. Witchcraft
5. Others
6. Others (specify)

c) Polio:
1. Curse
2. Satan
3. Supernatural
4. Don’t know
5. Injection
6. Others (specify)

d) Marasmus
1. Witchcraft
2. Lack of food
3. Bad Food
4. Infidelity
5. Others

e) Kwashiorkor
1. Lack of food
2. Bad water
3. Witchcraft
4. Don’t know
5. Others

f) Eye infection:
1. Evil eye
2. Dust
3. Wind
4. Witchcraft
5. Dirty water
6. Don’t know
7. Others (specify)

g) Ear infection:
1. Injury
2. Dirt
3. Foreign Body
4. Don’t know
5. Others (specify)
h) Fever:
1. Exposure to cold
2. Rain
3. Evil eye
4. Mosquito bites
5. Close contact with feverish person
6. Others (specify)

i) Skin rash:
1. Type of food (specify)
2. Clothing
3. Dirt
4. Heat
5. Normal
6. Genetic
7. Germ in the body
8. Don’t know
9. Others (specify)

j) Pneumonia:
1. Normal
2. Evil Eye
3. Cold weather
4. Others (specify)

15. What are the traditional methods of treating diarrhea in children.
1. Use herbs
2. Conduct ritual
3. Others (specify)

16. How do you perceive this treatment indicated in 4?
1. Very efficacious
2. Efficacious
3. Not quite
4. Not at all

What other methods of treatments would you seek to supplement the one stated in 4?
17. Which of the following are involved in development work in the area where you live.

<table>
<thead>
<tr>
<th>Group</th>
<th>Yes</th>
<th>No</th>
<th>Type of Work</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women group</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KAINU</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Village health committee</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community health workers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Village elders council</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Youth group</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>School committee</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Church group</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

18. Do you belong to any community group or social welfare group?
   1. YES  2. NO
   If yes, please answer questions 8 - 12

19. Name of group
   If yes, indicate what type of group
   1) Women group
   2) Clan welfare
   3) Church group
   4) Any other - specify.

20. What activity is your group involved in?
   1. Poultry keeping
   2. Bee keeping
   3. Crafts
   4. Goat rearing
   5. Others (specify)

21. What type of records are kept by your group?
   1. Group budget
   2. Members' contribution
   3. Sale of produce
   4. Group minutes
   5. Others (specify)

22. Who keeps this record?
   1. Chairman
   2. Secretary
   3. Treasurer
   4. Others (specify)
23. What do you use this record for?
1. Group meetings
2. Writing letters
3. Communicating with Government
4. Others (specify)

24. How would you rate the severity of the following diseases?

<table>
<thead>
<tr>
<th>Disease/Condition</th>
<th>Degree of Severity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measles</td>
<td>1-5</td>
</tr>
<tr>
<td>TB of lungs</td>
<td></td>
</tr>
<tr>
<td>Loose stool</td>
<td></td>
</tr>
<tr>
<td>Watery diarrhoea</td>
<td></td>
</tr>
<tr>
<td>Pneumonia</td>
<td></td>
</tr>
<tr>
<td>Malaria</td>
<td></td>
</tr>
<tr>
<td>Cough</td>
<td></td>
</tr>
<tr>
<td>STD Gonorrhoe</td>
<td></td>
</tr>
<tr>
<td>Worms</td>
<td></td>
</tr>
<tr>
<td>Marasmus</td>
<td></td>
</tr>
<tr>
<td>Kwashiorkor</td>
<td></td>
</tr>
<tr>
<td>Chicken pox</td>
<td></td>
</tr>
<tr>
<td>Polio with paralysed leg</td>
<td></td>
</tr>
<tr>
<td>Mental illness</td>
<td></td>
</tr>
<tr>
<td>Leprosy</td>
<td></td>
</tr>
<tr>
<td>AIDS</td>
<td></td>
</tr>
</tbody>
</table>

1. Always severe
2. Often severe
3. Rarely severe
4. Never severe
5. Merely a nuisance/trivial

25. When do the following diseases occur most?

<table>
<thead>
<tr>
<th>Season</th>
<th>Malaria</th>
<th>Measles</th>
<th>Cough</th>
<th>Joint pains</th>
<th>Pneumonia</th>
<th>Body pains</th>
<th>Marasmus</th>
<th>Kwashiorkor</th>
<th>Skin infection</th>
<th>Diarrhoea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harvesting time</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cold rainy season</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drought/adverse weather</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>During famine</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Planting time</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

26. What are the causes of diarrhoea?
1. Bad food
2. Bad water
3. Dirty hands
4. Evil eye
5. Flies
6. Sickness—state which one
7. Don’t know
8. Others (specify)

27. How can diarrhoea be prevented?
   1. Clean surrounding
   2. Cleansing through ritual
   3. Cover food
   4. Keep flies away
   5. Use latrines
   6. Wash hands
   7. Don’t know
   8. Others (specify)

28. How do you manage a child with diarrhoea at home?
   1. Feed as usual
   2. Give more fluids
   3. Reduce food
   4. Reduce fluids
   5. Give salt/sugar solution
   6. Breast feed
   7. No breast feeding
   8. Give drugs obtained from shop
   9. Others (specify)

29. How are diseases in general prevented in your community?
   1. Ritual performance
   2. Prayers
   3. Protective witchcraft
   4. Take modern medicine
   5. Others (specify)

30. Where do you seek treatment for the following conditions?

<table>
<thead>
<tr>
<th>Condition</th>
<th>Traditional Medicine</th>
<th>Modern Medical Care</th>
<th>Shop</th>
<th>No Care</th>
<th>Other</th>
<th>Don't Know</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Diarrhoea</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. TB</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. AIDS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Kesho korka</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Polio</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Mental Illness</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Fracture</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Leprosy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Malaria</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Diabetes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
31. What would you say are the causes, preventive and curative techniques of the following diseases?

<table>
<thead>
<tr>
<th>Conditions/Disease</th>
<th>Cause</th>
<th>Preventive Measure</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gonorrhoea</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mental Illness</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diarrhoea</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measles</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infertility</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cough</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skin conditions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eye infection</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Joint pains</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accidents</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pneumonia</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anaemia</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

32. Where/when you need medication, what form of treatment do you prefer (indicate in order of preference).
(In case of capsules and tablets what colour would you prefer)

1. Injection
2. Capsule (colour)
3. Tablets (colour)
4. Syrup
5. Others (specify)

Explain reason for your preference

33. What steps are taken in your community when all available measures fail to cure certain illness at the health facility?

1. Witchdoctor
2. Herbalists
3. Rituals
4. Prayers
5. Shop
6. Higher health facility
7. Others (specify)

34. Does the family have a latrine? (interviewer to observe)
1. YES
2. NO

35. If no, why doesn't the family have a latrine?


36. What are the taboos/beliefs associated with latrine use in excreta disposal?
   1. Not shared with teenagers
   2. Not shared with in-laws
   3. Others (specify)

37. Are children prohibited from eating certain foods?
   1. YES
   2. NO

If yes, list the foods which are restricted for children:
   a) Less than 4 months
   b) 4 months to 1 year
   c) Above 1 year

38. When is breast-feeding initiated (how long after birth)?

39. How long is breast-feeding continued?

40. At what age is the first food other than breast milk given (weaning)?

41. What is the first food given to children?
   1. Sugar solution
   2. Salt solution
   3. Sugar/salt solution
   4. Cow's milk
   5. Tinned milk
   6. Porridge
   7. Baby foods e.g. Cerecal
   8. Fruit juice
   9. Eggs
   10. Others (specify)

42. Are any infant foods purchased?
   1. YES
   2. NO

If yes, on whose advise?

Which food?

How is it prepared?
43. Do your current responsibilities allow you enough time for breast-feeding?
   1. YES    2. NO
   If no, how do you manage?
   1. Bottle feeding
   2. Spoon and cup feeding
   3. I don't do anything
   4. Others (specify)

44. You stopped breast-feeding when the child was how old?
   1. Below 6 months
   2. 6 months
   3. 8 months
   4. 1 year
   5. Over 1 year

45. Why did you stop breast-feeding?
   1. No breast milk
   2. Baby rejected breast milk
   3. Problem with the breast(s)
   4. To avoid loss of breast shape
   5. Fell sick
   6. Others (specify)

46. What kind of special weaning foods for infants are prepared or purchased?

47. Food avoided during pregnancy

48. Food avoided during lactation
49. Special foods consumed during pregnancy

50. Special foods consumed during lactation

51. Indicate any taboos/beliefs associated with faecal matter:
   1. What are its dangers
   2. How should it be disposed of
   3. What are the beliefs associated with it

52. Indicate activities which bring people together in your village.
   1. Cultural activities
   2. Economic activities
   3. Others (specify)

53. How would you rate concern of your neighbour when the following occur in your household:

<table>
<thead>
<tr>
<th>Very Concerned</th>
<th>Concerned</th>
<th>Not quite</th>
<th>Unconcerned</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Sickness</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Death</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Divorce</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Lost property</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

54. Indicate meetings you have attended during the last one month

<table>
<thead>
<tr>
<th>Meetings</th>
<th>Attendance Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Very well</td>
</tr>
<tr>
<td>Chiefs' Baraza</td>
<td></td>
</tr>
<tr>
<td>Clan Meeting</td>
<td></td>
</tr>
<tr>
<td>Welfare Meeting</td>
<td></td>
</tr>
<tr>
<td>Cooperative Meeting</td>
<td></td>
</tr>
<tr>
<td>Church Meeting</td>
<td></td>
</tr>
<tr>
<td>Health Meeting</td>
<td></td>
</tr>
</tbody>
</table>
55. Which health practices do people in your community normally perform to prevent illness in general?
1. Cleanliness
2. Balanced diet
3. Vaccination
4. Preventive drugs
5. Protective charms
6. Preventive rites/ritual
7. Don’t know
8. Others (specify)

56. List those things you do to keep your house and home clean.

57. What would be the reason for frequent pregnancies or closely spaced children?
- Husband stays with wife always
- Many kinds of new foods now
- Women don’t take care of themselves
- Women like men (or sex) so much
- Women have learned a lot of things when they are very young
- Women do not breast-feed
- Abstinence not practiced these days during early years of child’s life
- Husband likes sex so much
- Civilisation
- High demand of children
- Monogamy

58. If you would like to increase the space between your children what methods would you prefer?
- Traditional methods (specify)
- Pill
- Coil
- Injection
- Abstinence
- Others - specify

59. What is the purpose of vaccination given to children in the clinic?
- For treatment
- To prevent diseases
- To make a child stronger
- Others - specify
60. What is the difference between injection and vaccination?