Chapter 5

PLANING FRAMEWORK FOR THE MASTER PLAN

CHAPTER 5: PLANNING FRAMEWORK FOR THE MASTER PLAN

5.1 PROCESS OF FORMULATING THE MASTER PLAN

In order to develop a master plan, the basic strategies for reaching goals need to be drawn up (Fig. 5.1). The strategy framework includes an outline of policies and programmes that address the root causes of the salient health issues. The first cycle study demonstrated that a considerable number of Malawians have relatively favourable access to health facilities, whereas health indicators tend to be among the poorest in the world. Accordingly, the basic strategy for developing a master plan was directed towards bridging this gap. At the same time, the future situation of the major issues such as population, the economy, and disease conditions needs to be projected for the target year. The future frame provides the general objectives of the programmes to be implemented, including improving the quality of the health service delivery system such as health system management, human resources development and access to health services. More importantly, the basic strategy for the formulation of a master plan must be consistent with the national health development plan, as well as be in accordance with the basic concepts of primary health care.

In the first cycle study, two major health issues were identified: childhood malnutrition and poor maternal health. The next step was to come up with a list of specific health problems related to these two core issues, and then determine cause and effect relationships by drawing up two separate problem trees. The problem tree exercise aided in proposing interventions to the health problems (long list), which were viewed as effective solutions. Subsequently, each proposed intervention was considered in detail, and integrated into comprehensive projects (short list). The process of integration and prioritisation of projects was considered in the light of the basic strategy concept described above. Finally, concrete prioritised projects were proposed taking into account aspects of priority, feasibility, cost-effectiveness and efficiency.

5.2 BASIC STRATEGY

Physical access to health facilities in Malawi has been reported to be better than that of other sub-Saharan African countries and low-income countries in other regions. According to UNICEF, since the late 1980s, about 80 percent of Malawi's population live within one hour's travelling time to a health facility. In addition, the Demographic Health Survey 1992,[1] reported that 82 percent of sample communities are located within 10 kilometres from the closest health facility.

[1] Demographic and Health Survey 1992

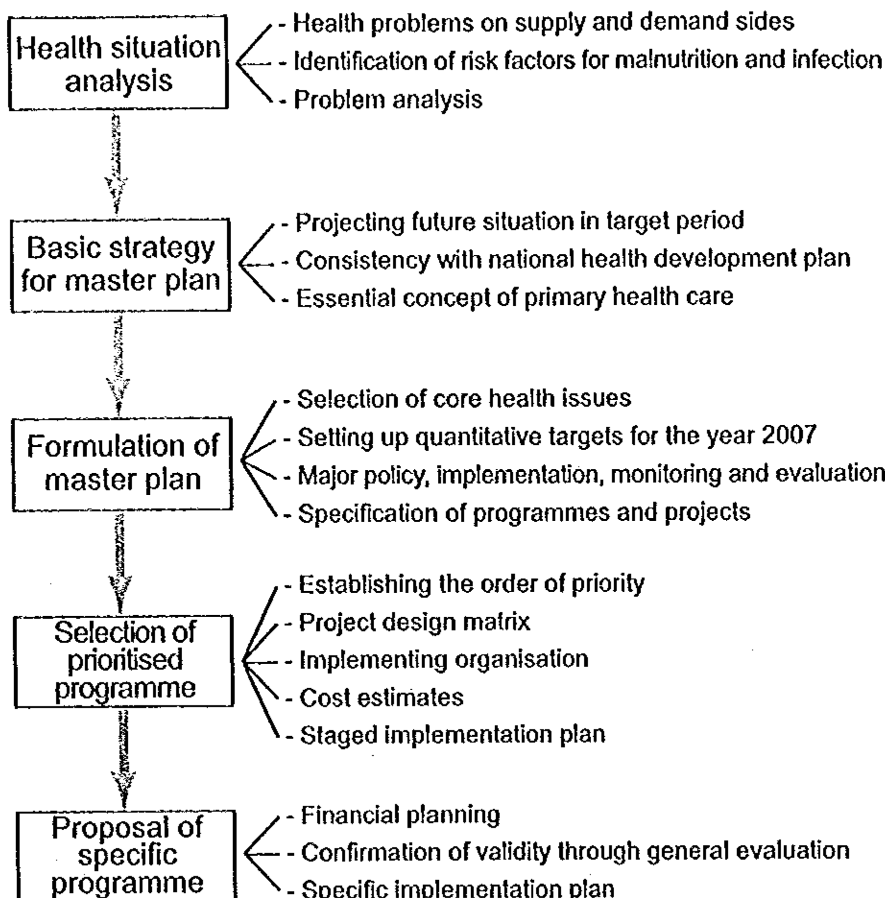

Fig. 5.1 Process of Formulating a Master Plan

Utilisation of health services in the country is quite high compared to other sub-Saharan countries. On average, Malawians make about two outpatient visits per year and about four medical contacts per year for children under five. In addition, more than 90 percent of pregnant women receive some antenatal care at least once during their pregnancy. Delivery at health centres is also quite common with about 50 percent of deliveries taking place at a health facility.

Despite these relatively favourable indicators of health service provision, the country's health outcome indicators are among the poorest in the world.[2] The factors behind the high infant and under five mortality rates might begin to explain this gap between the quantitative indicators on health access and utilisation and adverse health status. These factors will be key in developing the basic strategy for strengthening primary health care in Malawi. The gap is not caused by a single major factor, but rather by a combination of multi-level factors ranging from socio-cultural issues to the management of the health system.

Thus, the key issue addressed in this report is the improvement in the quality of health care, which includes health system management, human resources development, and access to health

[2] Malawi Social Indicators Survey 1995, Sep 1996.

services. Physical access to health facilities was not a focus, however, improvements in this area would also have a positive impact on health outcomes.

5.3 CURRENT HEALTHY POLICY

5.3.1 National Health Plan

1) Background

Since the completion of the Third National Health Plan 1986-1995, the Ministry of Health and Population (MOHP) has been engaged in the process of developing the Fourth National Health Plan. In the Policy Framework Paper published in September 1995, government expressed a commitment to embark on health policy reforms that would eventually transform the health care delivery system by placing a greater emphasis on under-served remote rural areas and on women and children.

Following several nation-wide consultations and workshops, MOHP identified six priority issues: decentralisation, human resources development, financing, hospital autonomy, an essential health package (EHP), and the managerial capacity of the districts. A core team comprising six senior-level managers with donor representation under the chairmanship of the principal secretary was formed. Six team members were selected from within the core team to establish committees to explore each of the six priority issues, and the recommendations and findings from the respective studies were passed on to the districts in the form of District Planning Guidelines. The Malawi National Health Plan 1999-2004 was finalised in May 1999[3].

2) National Development Goals and Objectives

The Government of Malawi has committed itself to poverty alleviation under its Vision 2020 Programme, and announced a national policy to decentralise management authority to District Assemblies. These mandates serve as the guiding directives for MOHP's approach to improving the health status of all Malawians by the year 2004.

3) Focus of National Health Goals and Objectives

The current overall policy goal of the health sector as set out in the previous National Health Plan, and which remains the goal of the current five year-plan, is to raise the health status of all Malawians by reducing the incidence of illness and occurrence of death in the population. The goal will be accomplished through the development of a sound delivery system capable of promoting health, preventing, reducing and curing disease, protecting life and fostering general well being and increased productivity.

The following eight medium-term objectives have been developed to support the improvement of health status over the next five-year period (1999-2004):

- To expand the range and quality of health services focused on maternal health and children under the age of five years
- To improve the general health status of the population by strengthening, expanding, and

[3] Malawi National Health Plan 1999-2004, May 1999.

integrating relevant health services
- To increase access to health care facilities and basic health care services
- To increase, retain and improve the quality of trained human resources, and distribute them efficiently and equitably
- To provide better quality health care at all health facilities
- To improve efficiency and equity in resource allocation
- To strengthen collaboration and partnership between the health sector, communities, other sectors (e.g., local government and tourism) and private providers (allopathic and traditional)
- To increase overall resources in the health sector and allocate them efficiently and equitably

4) Key Strategies

To achieve the range of broad-based reforms that must be intrinsically linked to the improvement of health status, MOHP will undertake the following strategies:

Strengthening primary health care

Strengthening primary health care is the most important mission, but access to health facilities, essential drugs and personnel remains a problem. In order to improve coverage the Ministry will strengthen primary health care through the introduction of an Essential Health Package and the Bakili Muluzi Initiative.[4]

Sector-wide approach

Malawi's health sector faces the problem of inadequate and inefficient allocation of resources, on top of having a longstanding weakness in the co-ordination of donor funding. Enhancing the partnership between government and donors in the delivery of health services is a top priority. Rationalisation of health service financing, management and delivery mechanisms will be addressed through a Sector-wide Approach (SWAp) in the support of health services. Future partnerships will aim for mutual trust and respect in the forging of joint plans and strategies, which will replace the traditional vertical, and by definition uncoordinated, approach to health project financing.

Decentralisation of health care management

In order to strengthen health care management, responsibility will be extended to districts, central hospitals and local levels. This will be fulfilled through the Local Government Act No. 42, which empowers the District Assemblies to run health services in their respective areas of jurisdiction. Once basic systems are in place and core capacities developed, managerial authority for handling all finances, human resources, and physical resources will be transferred.

Cost recovery and user fees

In the face of inadequate financial resources and increasing health care demands, the Ministry will introduce user fees. This move reflects the aim to supplement public financial resources by an alternative mechanism.

Policy formulation and regulation

MOHP will strengthen existing mechanisms for policy formulation and regulation to ensure that

[4] Briefing on the Bakili Muluzi Health Initiatives, Jan 1998.

coherent health sector policies and regulatory mechanisms are formulated to guide the provision of health services under the decentralised system.

Strengthening the health management information system
As a vital mechanism tracking progress in the achievement of targeted sector-wide reforms, MOHP will select a set of key indicators which will be monitored on a yearly basis, in the form of quarterly meetings between MOHP, districts, and the donor community.

Human resource strengthening
In view of the shortage of staff in priority cadres for primary health care, the current output of training institutions will be expanded to meet current and future demands.

5) Tasks and Activities for the Planning Period 1999-2004

Health plan targets, strategies and activities were set in line with the health policies, objectives and priorities included in the five-year Health Plan. Under eight objectives, 22 strategies, 60 tasks, as well as 240 main activities were outlined.

5.3.2 Primary Health Care Activities

1) Concept of Primary Health Care in Malawi

The aim of the National Health Policy in Malawi is "to raise the level of health of all Malawians by reducing the incidence of illness and occurrence of death in the population". This is to be achieved through the development of a sound delivery system capable of promoting health, preventing and reducing disease, protecting life, and fostering general well being and increased productivity. The main objective in the health policy of the Ministry is "to reduce the high morbidity and mortality rates". To achieve these goals, the Ministry has identified a number of specific programmes aimed at tackling specific health problems. One such programme is primary health care (PHC), the main objective of which is to strengthen community-based activities through the introduction of an Essential Health Package.

The specific objectives of PHC are as follows:[5]

- Empower individuals, households, and communities to take responsibility for their own health
- Encourage the establishment of drug revolving funds which would be supported by income generating activities .
- Conduct a study on community health volunteers to determine the reasons for the high dropout rate and to develop an incentive scheme
- Accelerate the training of health surveillance assistants and community health volunteers
- Facilitate the formation of and conduct training for Village Health Committees in various basic skills
- Target resources to the priorities identified by communities

PHC is, therefore, essential health care made universally accessible to individuals, families and communities through their full participation and at a cost that the community can afford to maintain

[5] The Primary Health Care Programme in Malawi, H.R.D.C. Mbengo-Mbewe, Aug 1997.

their development in the spirit of self reliance and self determination.

2) Target Activities of PHC Programmes

The long-term goal of the PHC programme is to have in each of the forty-six thousand villages a fully functioning Village Health Committee which will be able to:

- Disseminate Information, Education and Communication (IEC) messages on various health issues
- Conduct community nutrition education, and communicate messages on related issues
- Construct, protect, and repair shallow wells; construct ventilated and improved pit latrines; dig proper refuse pits; teach people the importance of washing hands with soap and clean water after using the latrine; teach people to use the two-cup system when drawing water for drinking from a pot
- Encourage the use of modern methods of family planning; arrange to train traditional birth attendants (TBAs); construct antenatal clinic and TBA shelters
- Request the nearest health worker to come to the village and immunise the children against all immunisable diseases. Use the community health workers as resource persons and facilitators for comprehensive health activities
- Disseminate information on the prevention of all locally endemic diseases. Have the resources to treat all minor ailments and refer difficult cases to nearby health institutions
- Start and maintain drug revolving funds, and keep in stock all essential drugs at all times
- Teach the community about preventive mental health. Make arrangements to refer all difficult mental health cases to the nearest health institution
- Teach their communities about preventive oral health. Arrange for the village health volunteers to conduct health talks on oral health. Conduct oral health talks in nearby schools

The PHC programmes are run by the Ministry of Health and Population, with assistance from a number of donor organisations through bilateral and other agreements.

5.3.3 Bakili Muluzi Health Initiative (BMHI)

In line with WHO's strategic direction of "Health for All" in the 21st century, President Bakili Muluzi has proposed a Health Initiative.[4] The initiative seeks to make essential drugs available to communities within walking distance of their homes in order to reduce the burden of disease due to common illnesses. It also aims to implement focused community based feeding programmes to combat childhood malnutrition, and to employ retired health personnel to render health services within the community where they live. The President has also directed that the fight against HIV/AIDS should be enhanced and the population coverage with safe water and adequate sanitation should be enlarged. BMHI will be at the core of the Essential Health Package, providing a pivotal base for improving the nutritional status of Malawi's children.

5.4 FUTURE FRAME FOR PLANNING

5.4.1 Social Frame

1) Demographic Situation

Since independence from Britain in 1964, four censuses have been carried out about every 10 years in Malawi. The fourth census started in September 1998, and preliminary results were reported recently although it may take one to two years to provide the detailed demographic data.[6] According to the 1998 preliminary results, the total population of Malawi was 9,838,486 with an overall sex ratio of 96 (Table 5.1). The annual rate of increase in the population was estimated to be 1.9 percent on average between 1987-1998, as compared to 3.7 percent between the 1977 and 1987 intercensal period. The main reason suggested for the slower growth rate from 1987 to 1998 is the repatriation of Mozambican war refugees. Other factors that are likely to have contributed to the slower rate of growth include the possible decline in fertility rates and rising death rates and incomplete coverage during census enumeration.

Table 5.1 1998 Population and Percentage Distribution by Sex and Age
(source: 1998 census data)

Region	Total	Sex		Age			
		Male	Female	0-4	5-14	15-17	18+
Malawi	9,838,486	4,809,839	5,028,647	1,658,841	2,649,643	649,203	4,880,799
(%)	100	48.9	51.1	16.9	26.9	6.6	49.6
Northern Region	1,229,360	599,728	629,632	209,819	341,401	85,281	592,859
(%)	100	48.8	51.2	17.1	27.8	6.9	48.2
Central Region	4,041,636	1,999,910	2,241,726	709,145	1,097,647	259,778	1,975,066
(%)	100	49.5	50.5	17.5	27.2	6.4	48.9
Southern Region	4,567,490	2,210,201	2,357,289	739,877	1,210,595	304,144	2,312,874
(%)	100	48.4	51.6	16.2	26.5	6.7	50.6

Given this rate of population increase, the total estimated population will be approximately 11 million in 2004 and 11.65 million by 2007 (Fig. 5.2). Since these estimates are considerably lower than was expected before, socio-economic conditions are assumed to undergo a change for the better in terms of economic growth. However, the census data shows that 49.5 percent of the total population is under 15 years of age, which indicates a high dependency ratio.

2) Influence of AIDS on Demographic Situation

It is roughly estimated that with the high prevalence of AIDS, an additional 120,000 Malawians will die each year over the number of deaths if there were no AIDS. Using this estimate, the additional deaths from AIDS will reach 620,000 by 2005. However, it is also predicted that AIDS will cause the population growth rate to decline from the current high level, meaning that the overall population will be substantially reduced due to the prevalence of AIDS.

One significant result of the AIDS pandemic is a change in the age composition of the Malawian population, or more specifically the loss of many in the skilled working population. While the mortality rate of those aged 15 to 49 was 10.8 percent from 1980 to 1985 prior to the spread of

[6] 1998 Population and Housing Census, Report of Preliminary Results, NSO, Dec 1998.

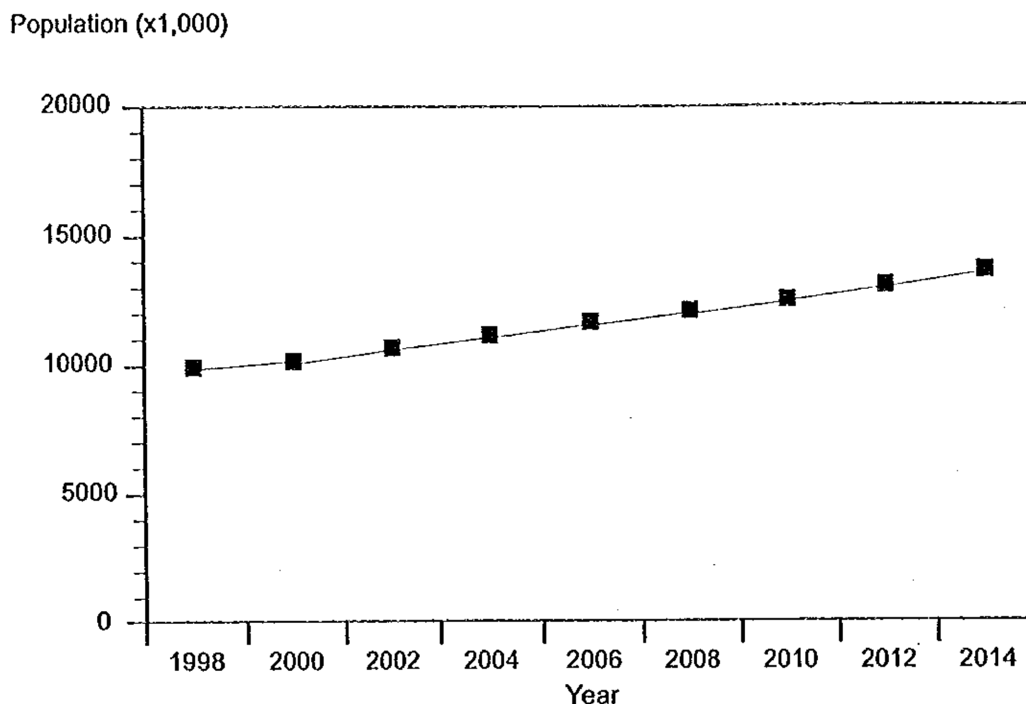

Fig. 5.2 Change of Total Estimated Population in Malawi
(source: 1998 census data)

AIDS, it stood at 14.7 percent between 1990 and 1995, and is estimated to become 21.2 percent between 2000 and 2005.

3) Economic Growth

Malawi is a remarkably low-income country with GNP per capita of 170 dollars in 1995. During the first half of the 1990s, Malawi faced substantial economic instability and was burdened with a huge fiscal deficit, rapid inflation, and a fluctuating GDP compounded by two major droughts. However, an economic growth rate of 9.5 percent was attained during 1996 and 5.2 percent during 1997. The government has predicted that the medium-term projection for economic growth will be around 4 percent per annum, which would result in a modest rise in GNP per capita (Fig. 5.3).[7] This will depend on factors such as sufficient rainfall for agricultural production and continued implementation of measures to stabilise economic growth.

On the other hand, AIDS-related mortality has had a significant impact on the younger work force, thus contributing to a substantial decline in GNP per capita. Coupled with the devaluation of the kwacha in excess of 40 percent following the deterioration of the tobacco industry, this optimistic view of the economic situation is considered unrealistic.

4) Summary of major Issues

The Malawi health sector is plagued with many problems such as financial constraints, a shortage of human resources, insufficient health facilities and equipment, and weaknesses in the

[7] Economic Report 1998, NEC.

management and information systems. In addition, the pressures of rapid population growth and economic instability have contributed significantly to the deterioration of health conditions for the poorest segment of the population. Despite the difficulty in projecting the morbidity and mortality situation to the year 2007, the main contributors to morbidity and mortality need to be vigorously tackled. These include communicable diseases such as acute respiratory infection, malaria and tuberculosis, as well as diarrhoea and malnutrition in children under five and the high mortality of pregnant women.

Although many health projects such as EPI, food supplementation programmes and PHC activities have been implemented to combat the main health issues, progress has been slow. In fact, health conditions have actually deteriorated as demonstrated by the recent outbreak of measles in many districts, which had markedly decreased until the beginning of the 1990s due to vaccination. Therefore, the future for the health sector will not be bright unless the current health system is improved.

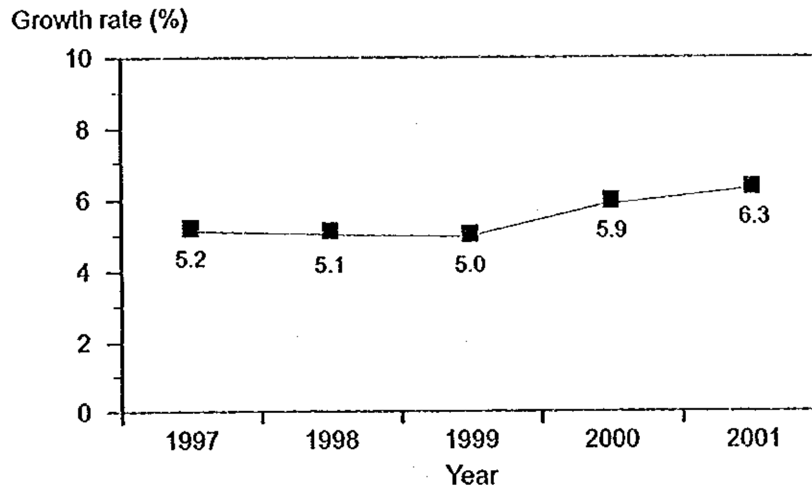

Fig. 5.3 Projections of Gross Domestic Product, 1997-2001
(Source: National Economic Council)

5.4.2 Quantitative Targets

The Malawi National Health Plan has set the following five-year quantitative targets to achieve the first objective: to expand the range and quality of health services focused on maternal health and children under the age of five years. These outcome indicators provide a measurement of accomplishment of national health sector priorities, strengthening of the health care system, and improvement in the quality of life.

1) Maternal mortality reduced from 620 to 310 per 100,000
2) Infant mortality reduced from 134 to 100 per 1000
3) Under five mortality rate reduced from 234 to 150 per 1000 births
4) Neonatal mortality rate reduced from 55 to 40 per 1000 births

5) HIV seroprevalence rate reduced from 13% to 7%
6) Average diarrhoeal episodes in under fives reduced from 6 to 3 per child
7) Immunisation coverage up from 80% to 95%
8) CPR increased from 14% to 28%
9) 90% of women delivering in health facilities
10) Total fertility rate down from 6.7 to 5.0 children
11) Childhood malnutrition in under fives reduced from 50% to 25%
12) Underweight rate in under fives reduced from 30% to 15%
13) Wasting in under fives reduced from 7% to 1%
14) Iodine deficiency disorders reduced to zero
15) Iron deficiency anaemia reduced from 56% to 38%
16) Exclusive breastfeeding increased from 11% to 60%
17) IMCI implemented in four districts by 1999 and all 26 by 2004
18) Reduce by 25% the 1999 incidence of severe and complicated malaria in children under five years reported at health facilities by 2003
19) Reduce by 15% the 1999 level of mortality due to malaria in children under five years by 2004
20) Reduce malaria, morbidity and placental infection among pregnant women by 25% in the next five years
21) Fully integrate all child-related aspects of malaria control in IMCI by 2004
22) Eliminate neonatal tetanus by 2004
23) Integrate all ARI activities to IMCI by 2004

5.5 PLANNING OBJECTIVES AND STRATEGIES

5.5.1 Goal for National Master Plan

The overall goal for the national master plan is to strengthen PHC activities in order to improve the health condition of all Malawians through an effective and sustainable mobilisation of available resources targeted to health care.

5.5.2 Basic Principles for Achieving Goal

Based on the overall strategy for formulating the master plan, the basic principles for achieving the above goal are as follows:

1) To place emphasis on the quality of health care through strengthening the management of the health care system, human resources development, and improving access to the health services

2) To prioritise projects based on the major issues identified by MOHP such as decentralisation, human resources development, health finance reform, self-management by the hospitals, provision of an essential health package, and capacity building of local management staff

within the framework of the national health care policy

3) To make plans based on the basic principles and primary health care activities in Malawi, particularly taking into account the improvement of community based activities

Chapter 6

NATIONAL MASTER PLAN

CHAPTER 6: NATIONAL MASTER PLAN

6.1 DEVELOPMENT OF THE NATIONAL MASTER PLAN

The process of developing the health sector master plan involved several steps as explained in Chapter 5. First of all, it was necessary to identify and analyse health problems and the overall health situation in Malawi to determine effective strategies. To this aim, comprehensive health studies were conducted in the first cycle (mainly in Salima District) to better define the focus and target groups, while taking into consideration the study scope and objectives. In the second cycle, in-depth health surveys that supported the formulation of the master plan were conducted in the Northern and Southern Regions with the focus on the selected core health issues.

The next step was to analyse problems thoroughly by breaking down the core issues into specific problem components. Following this, concrete objectives emerged and possible interventions to address the problems were spelled out. The project proposals evolved from these steps, while local counterparts were transferred skills through their participation in the process.

The basic strategy and the framework of national health policy within which the core health were selected form key components for formulating a master plan. As mentioned in chapter 5, the basic strategy and framework of the national health policy provided further direction for the master plan. As previously mentioned, the focus was more on access to health care services at the community level than physical access to facilities. In addition, it was fortunate for the development study that the formulation of the national health plan had been carried out by MOHP during the same period. There was close interaction between the development study and the national plan; sharing of information and the introduction of a new technology for health situation analysis. Finally, the basic concepts of the Bakili Muluzi Health Initiative issued in January 1999 were able to be incorporated into the national master plan.

All the work associated with the master plan including project development has been conducted through continuous discussion and consultation with Malawian counterparts and related experts. A total of six reports (including the draft final report) covering the outcome of the study activities were submitted to MOHP, and each was discussed in subsequent meetings. In locales where the health studies were carried out, we held meetings and workshops with local counterparts. The contributions of those who participated in the workshops geared towards project development and prioritisation were especially meaningful and fruitful. Informal individual interviews and discussions were countless.

The master plan of operations thus elaborated is presented in this chapter, and concrete prioritised projects are proposed in chapter 7.

6.2 RELATIONSHIP BETWEEN NATIONAL HEALTH PLAN AND MASTER PLAN

6.2.1 Basic Concept

The purpose of developing a master plan of operations is not to propose a parallel plan to the national health plan or a vertical health project. Instead, the intention is to interpret the existing national health policy and health initiatives based on the results of the JICA PHC study and from there propose a plan of operations to improve the health situation. Therefore, the national master plan of operations was developed within the framework of the national health policy.

In some exceptional cases, the master plan proposes interventions that are not found in the national health plan. They were included due to their perceived importance based on analyses, and were subject to discussion with counterparts.

6.2.2 National Health Plan and Master Plan of Operations

The relationship between the national health plan and each proposed master plan of operations was considered as follows (Table 6.1):

1) Master plan of operations for reducing childhood malnutrition

This component of the master plan addresses the issue of malnutrition in children under five, one of the most critical health problems in Malawi. The target population and health problems in the master plan are in accordance with those in the national health plan where they are listed as top priorities. To accomplish the objectives, prioritised projects with three main components were proposed: strengthening the community-based growth monitoring programme (GMP), improving food security in the communities and enhancing community-based management of childhood illnesses. The underlying concept of the master plan is based on strengthening community-based activities with the intention to improve the primary health care system in Malawi.

The objectives in this master plan are also along the lines of the health sector policies of the Ministry of Health and Population. The solution to the problems of childhood malnutrition and frequent childhood illness is closely related to the provision of the essential health package, one of the important health policies. Although the plans for free medicine and community feeding programmes in the Bakili Muluzi Health Initiative are not identical to those of the master plan, placing focus on community-based activities is common to both plans. Schemes for strengthening the rural PHC system are also included in the government policy of decentralisation of health care management.

The issue of food security as well as food variety in the community is not directly addressed in

Table 6.1 Relationship between the National Health Plan and Proposed Master Plan

Objectives and Strategies of the National Health Plan	Proposed Master Plan		
	1. Mal-nutrition	2. Maternal mortality	3. Drug sellers
1. To expand the range and quality of health services focused on maternal health and children under the age of 5 years			
- *Strengthen and integrate reproductive health services*		○	
- *Strengthen and integrate child health services*	○		○
2. To improve general health status of the population by strengthening, expanding, and integrating relevant health services			
- *Strengthen selected disease control services through a complementary community and facility-based approach*	○	○	
- *Strengthen and expand environmental health promotion services through IEC initiatives*			
3. To increase access to health care facilities and basic health care services			
- *Strengthen PHC by emphasising the role of communities*	○	○	○
- *Expand coverage of PHC facilities*			
- *Reorient secondary and tertiary services to support PHC services*	○	○	○
4. To increase, retain and improve the quality of trained human resources, and distribute them efficiently and equitably			
- *Re-orient and train health workers in quality assurance programmes*		○	
- *Train staff to provide full range of clinical, preventive and promotive health services*	○	○	
5. To provide better quality health care in all health facilities			
- *Establish/strengthen training institutions and seek technical assistance for doctors and specialists*	○	○	
- *Improve the working and living conditions of health workers in order to retain the existing staff and attract newly qualified health workers*	○	○	
- *Improve efficiency, equity and effectiveness in staff utilisation and deployment*	○	○	
6. To improve efficiency and equity in resource allocation			
- *Develop a needs based financial resource allocation formula*			
- *Implement a district-based decentralised health care management system*	○	○	○
- Strengthen the drug management processes and distribution			○
- Strengthen planning and management system of the ministry	○	○	
7. To strengthen collaboration and partnership between the health sector, communities, other sectors (i.e. Local Government and Tourism), and private providers (allopathic and traditional)			
- *Implement a Sector Wide Approach*	○	○	○
- *Strengthen IEC*	○	○	○
- *Provide clear lines of linkages with the private-not-for-profit and private-for-profit health sector*			○
8. To increase overall resources in the health sector and allocate them efficiently and equitably			
- *Strengthen/introduce a cost recovery system*			
- *Introduce a social health insurance system*			
- *Strengthen and extend drug revolving funds*	○		○

○ indicates that the concept of the master plan is included in the strategy to accomplish objectives of the national health plan.

the national health plan. However, since the food supplementation programme by WFP has recently been phased out, ensuring food production and security is a critical issue for improving childhood nutrition. In this master plan, an integrated nutrition project with linkage to other related ministries such as agriculture and national economic council is proposed.

2) Master plan of operations for reducing maternal mortality

The national health plan for 1999 – 2004 identifies high maternal mortality and morbidity as one of the main health problems in the country and considers the provision of safe delivery services as a top priority. This component of the master plan focusing on post-pregnancy issues aims to reduce maternal mortality through improving both facilities and care. Activities include strengthening essential obstetrics care (EOC) and antenatal care (ANC), provision of basic infrastructure, establishment of an obstetric referral system and promoting IEC. This plan of operations is in accordance with the priority health and population services of the national health plan.

The master plan is also closely related to some of the supporting health policies adopted to guide the operations of the health sector. In particular, safe motherhood is included in the introduction of the essential health package. In addition, the establishment of a referral system that is thought to be an important factor in reducing maternal mortality and community-based activities focused on IEC promotion are included in this master plan. These strategies are in line with the policy of decentralisation of health care management which supports the increase in community participation and promotes the efficient utilisation of available resources.

Although the master plan does not include the construction of new health facilities, rearrangement and improvement of health facilities including the upgrading of selected rural hospitals to community hospitals, and of some health dispensaries to health centres is proposed. The provision of basic infrastructure such as safe water, electric power supply and radio communication systems is also planned for all health facilities in selected districts. The improvement of health facilities is a crucial factor in providing better quality health care at all health facilities, a key component of the national health plan.

3) Master plan of operations for improving the role of drug-sellers in community-based health care

This component of the master plan is distinct from the others in that it focuses on the private sector. The role of the private sector is not prominent in the national health plan, but it is referred to in the objective "to strengthen collaboration and partnership between the health sector, communities, other sectors, and private providers". The target population included in this master plan is mainly the shopkeepers (grocery and kiosk) who earn a living by selling medicines to village people. They are recognised to play a vital roles in the PHC systems in communities. The project activities in which drug sellers are trained to better inform the public about the appropriate use of drugs should have a great impact on PHC services. Therefore, the basic concept of the plan follows the national health policy for strengthening PHC activities in the community.

The proposed activities in this master plan are closely related to the drug revolving fund (DRF) programme. Drug availability will be improved when the system is expanded and well managed, however, the number of functioning DRFs is actually much more limited compared to the number of groceries and kiosks. Thus, considering where people get their drugs, it is important to educate

informal drug sellers in addition to strengthening the DRF programme. The activities proposed in this plan supplement the efforts regarding community-based management of childhood illnesses, in effect enhancing the master plan for reducing childhood malnutrition.

6.3 MASTER PLAN OF OPERATIONS FOR REDUCING CHILDHOOD MALNUTRITION

6.3.1 Situation Analysis

Previous studies have found that the nutritional status of Malawian children is dire, even among the sub-Saharan African countries. The present study confirmed the often-sited state that more than 50 percent of under five children can be classified as undernourished. IMR and U5MR are also extremely high: 134 and 234 per 1000 live births respectively in 1992. The government plans to improve the situation, with the aim to reduce them to 100 and 150 respectively by the year 2004. But it will be difficult to achieve these objectives unless there is a dramatic improvement in the current nutritional status. This view is mainly derived from WHO's remarks that more than half of the child deaths in developing countries are related to undernutrition.

According to the preliminary results of last year's census, population decreased in the districts along the Mozambican border with the return of refugees to their country. But overall, population has continued to increase and the trend is expected to continue. Shortage of cultivable land has always been a problem, but will worsen as the population grows. This reduction in the land area available per person is a serious threat to the nutritional level in rural areas, particularly in the Southern Region where the situation is already severe. As one measure to cope with this problem, the government plans to promote a highly productive hybrid maize variety in a switch from the conventional ones and increase the yield per hectare. But purchasing seeds and fertiliser is not a low-cost affair. Because a large number of small peasants will not be able to afford the necessary inputs ,the plan will be difficult to implement.

6.3.2 Relationship to National Health Plan 1999-2004

By introducing the essential health care package (EHP), the National Health Plan aims to increase people's access to basic health care services. This Master Plan is along the same lines of the National Health Plan, as it focuses on nutritionally vulnerable children under five and puts special emphasis on community-based activities. Because children's low nutritional status is chiefly caused by difficult access to both health care services and food, community-level activities are deemed important. The components for intervention proposed here have their origins in the National Health Plan.

6.3.3 Problem Analysis

The major reasons for the poor nutritional status of Malawian children are:

1) Failure of the growth monitoring programme (GMP) to effectively prevent the mildly undernourished from manifest malnutrition
2) Inadequate measures to prevent a relapse in children who have been discharged from NRUs following the treatment of severe malnutrition
3) Insufficient quantity and improper quality of oral food intake
4) Frequent bouts of infectious diseases which rob the appetite and obstruct the absorption of nutrients

1) Insufficient performance of current GMP

It is difficult for mothers who have many small children and are burdened by house and farm work to faithfully take children of target age to GMP. The qualitative research revealed that in some areas mothers neglect to take their malnourished children to GMP because of possible ridicule from fellow villagers. It can be stressful to participate in GMP. There are also examples where the insufficient knowledge of the parents regarding nutrition and lack of sense of responsibility on the part of the father, the decision maker in the household, hampers the work. Therefore, for a variety of reasons, GMP only reaches half of the target population, as was the case in one village the team visited in the first cycle study.

For some mothers, the free supplementary food provisions given at GMP are the main motivation for participation. But this incentive is no longer effective in most areas due to the suspension of aid from the World Food Programme (WFP).

The current GMP is weak in detecting children on the brink of malnutrition, as the programme relies on weight as the main measure. By the time a child becomes underweight they are already malnourished. The team found that the "risk factor" column on the "under five health card" was left blank in many cases where risk was present, and therefore no early special care had been offered. Home visits by health workers to observe progress and give necessary advice to parents of those detected as underweight was virtually absent. There are at most one or two Growth Monitoring Volunteers (GMVs) in each village, and not all are active as they are given no compensation or incentives. Moreover, GMVs have other work, hence it is not possible for them to make the rounds to the homes of so many children each month. The Health Surveillance Assistants (HSAs), who are supposed to supervise GMVs, have responsibility for five or six villages making it difficult for them to manage properly.

Traditionally, children diagnosed as underweight have been given supplementary food under the programme. But at-risk children who are normal weight at the time of check-up have not been given supplementary food as supplies of food are limited.

The GMP programme managers also need to solve another problem pointed out by the participants—that of frequent cancellations of GMP scheduled meetings. This practice discourages participation as mothers come on foot from distant places along with their toddlers. Some of the reasons given for the cancellation were the inconvenience of the health worker and poor access in the rainy season. GMP is typically conducted outdoors, so it is not possible to hold sessions during bad weather.

2) Frequent relapse of malnutrition in children once discharged from NRU

The main reason for relapse is inadequate care given to the affected child after discharge. Many factors are possible here: lack of education regarding post-discharge care, lack of time due to a demanding work schedule, or an insufficient food supply. Another reason, which is in fact related to the first, is that the recurrence of malnutrition or the symptoms of infectious diseases are rarely given immediate medical attention. Such symptoms are overlooked or not acted upon due to lack of consent by the father for medical treatment or difficult access to medical facilities. Finally, inadequacies were discovered in the follow-up care after discharge from the NRU. No systematised support system to mobilise GMVs and HSAs is in place for this purpose, nor is there a reverse referral system, from NRU to health centres or community health workers.

3) Insufficient and improper food intake

As complementary foods are introduced too early, diarrhoea starts at an early stage of infancy. Similarly, protein intake from breast milk is insufficient when breastfeeding is stopped before the age of two years, and most children are rarely fed protein-rich foods. Some Malawians are superstitious about consuming eggs, firmly believing that if eggs are fed to children their naval will start oozing out. Superstitions such as these also affect the distribution of nutrients within the family.

Many children's calorie intake is insufficient for a number of reasons: lack of disposable income to buy food, the practice of serving male adults first, frequent attacks of infectious diseases which cause a diminished appetite, and mothers too overburdened with household and farming chores to provide adequate childcare.

The present survey, which was conducted in the rainy season, highlighted another issue: the staple food supply is exhausted before the harvest begins, even in farming villages. Even in the rare instance of a high yield, the crop is sold in the market for cash soon after harvest. However, when the food kept aside for self consumption has run out, the same is bought back at a higher price in the pre-harvest season. This uneconomical consumption cycle also contributes to malnutrition.

There are lacunas in the quality of the food, in addition to the lack of protein mentioned earlier. It is difficult to get adequate vitamins, iron, iodine and other trace elements from a diet with such little variation. Most Malawians are not able to enrich their diet with a variety of foods because of their economic situation. On top of this, they lack knowledge on nutrition. The consumption of food based on superstition has also limited the nutritional benefits of the food available.

4) Frequent infections

Malnutrition plays a large role in the vicious cycle of infections by reducing immunity thereby increasing the risk of falling prey to infectious diseases. Becoming sick in turn results in a worse nutritional status. About 15 to 30 percent of women of reproductive age are infected with HIV and one in every three children born to such women is HIV-infected, mainly by the

route of vertical transmission. These children frequently succumb to infectious diseases as they gradually loose their immunity.

Measles is more harmful on nutrition than the other vaccine-preventable diseases because of accompanying loss of appetite, diarrhoea and pneumonia. In spite of these inherent dangers of measles in early infancy, vaccination coverage is low (about 60% according to one report) when compared with the other vaccine-preventable diseases (about 80%). There are frequent outbreaks of measles in Malawi.

After the popularisation of ORT, diarrhoea is no longer a direct cause of mortality. Morbidity, however, has remained as high as ever, with children having diarrhoea six times per year on average. The study survey confirmed that frequent diarrhoeal episodes within the past three months increase the risk of undernutrition. Transmission of infections by oral route is high because of lack of safe drinking water, uncooked food, underutilisation of lavatories, and lack of habit of washing hands before consuming food. These factors are also responsible for the very common infestation of parasitic worms in the digestive tract. Worm infestation is an important cause of nutritional anaemia among elder children because morbidity increases with the passing of years.

Most of Malawi is classified as either a holoendemic or hyperendemic malarious area, so people are prone to frequent attacks of malaria. In the case of children who develop fever, the probability of malaria as the diagnosis is much higher than that of acute respiratory infection (ARI). Frequent bouts of malaria infection from the later stages of infancy lead to repetitive acute malnutrition and eventually to chronic malnutrition. If malaria occurs in pregnant women, newborns are likely to be of low birth weight and nutritionally at a disadvantage from the very beginning of life.

It is commonly reported that the morbidity of lower respiratory tract infections (LRTIs) is much higher in developing countries than in developed countries, while that of upper respiratory tract infections (URTIs) is no different between them.

In summary, the reasons for low nutritional status among Malawian children are numerous and further complicated by underlying causes such as poverty, low standards of education and other socio-cultural factors.

6.3.4 Objectives Analysis

The problems that precipitate the prevalence of childhood malnutrition were addressed individually. They were first converted into overall objectives, which were then broken down into more specific objectives, as follows:

1) Possible objectives to strengthen GMP so as to prevent malnutrition more effectively:

- The number of communities that can independently operate GMP (not influenced by outside health workers nor by the weather) is increased.
- All children of target age, especially those who have poor nutritional status, attend GMP.
- House visits to children who do not turn up at GMP are made and follow-up observation done.
- Children with one or more risk factors for malnutrition are closely monitored and necessary preventive measures are offered even while they are within the normal weight range.
- Each community is responsible for securing supplementary foods.
- Distributed foods are consumed only by the targeted children.

2) Possible objectives to prevent the relapse of malnutrition after patients are discharged from NRUs:

- Children receive proper nutritional care and basic health care at home after being discharged from a NRU.
- Children showing signs of relapse or fortuitous infection are promptly taken to a hospital or health centre by parents.
- Nutritional rehabilitation is continued in communities where community-based feeding programmes are established.
- The responsibility for patient observation is handed over to community health workers through the feedback referral system, and they follow up children after discharge.

3) Possible objectives for improving the quality and quantity of meals fed to children:

- Young infants are substantially free of diarrhoea by means of exclusive breast feeding preferably for six months and cooking complementary foods well.
- Children have sufficient protein intake through the combination of prolonged continuation of breast feeding and being fed protein-rich complementary foods.
- Children have sufficient calorie intake throughout the year and receive enough trace elements from a variety of foods and supplementary tablets.

4) Possible objectives to reduce the high morbidity of infectious diseases:

- Outbreaks of vaccine-preventable diseases, especially measles, are controlled by sufficient immunisation coverage.
- Morbidity of diarrhoeal diseases and parasite infestation is reduced by means of securing safe water, boiling drinking water, cooking well, and other hygienic practices and vermifuges are regularly given to school aged children.
- Morbidity of malaria is reduced among under five children by having them sleep under bed nets.
- Severe malaria is prevented by early detection and treatment for any feverish child.
- Low birth weight babies are reduced by improving the coverage of malaria prophylaxis among pregnant women.

- Occurrence of severe ARI cases is decreased by early diagnosis and proper treatment of mild cases.
- Common childhood diseases including those described above are managed at a standard level of quality throughout the country, based on an improved drug supply system to communities. (The basic drugs to be supplied include oral rehydration solution [ORS], antimalarials, antibiotics, vermifuges, antipyretics, etc.)

6.3.5 Framework of the Master Plan of Operations (for Reducing Childhood Malnutrition)

1) Overall goal of the Master Plan

The overall goal of the Master Plan is a reduction in the prevalence of malnutrition among children under five years old from 50 to 25 percent by 2004.

2) Objectives of the Master Plan

(Overall)

- More children prevented from developing or having a relapse malnutrition by GMP
- Increased ability by communities to secure sufficient and appropriate food for all children under five
- Common childhood illnesses effectively managed at PHC facilities as well as in the communities

(Specific)

- Improving childhood nutritional status given priority at all levels of health care: national, district, community, and household
- GMP (combined with house visits) better detects and follows not only underweight children but also normal weight children with risk factors
- Accurate statistics on nutritional status collected at the community level
- Food supplementation offered to children at community-based feeding sites all year around (as a result of a successful community garden programme)
- Exclusive breast feeding for six months and prolonged breast feeding for more than two years more widely practised
- Vitamin A supplementation combined with EPI fully practised
- Mild cases of malnutrition treated in the community at an early stage, and more severe cases transferred in a timely manner to upper health facilities (made possible by the nation-wide implementation of IMCI)
- EPI reactivated and immunisation coverage increased
- Hygienic behaviour improved, and prevalence of diarrhoea and intestinal parasite infestation reduced (improved disease control will in turn improve nutritional status)

3) Overall strategies of the Master Plan

The seven basic strategies of the Master Plan are:

A. Strengthening community-based GMP
B. Operating community gardens
C. Controlling relapse of malnutrition
D. Improving food storage and preservation
E. Controlling diarrhoea and worm infestation
F. Controlling EPI diseases
G. Expanding IMCI

4) Components of the Master Plan
Three components are proposed here following extensive review by government officials:

1) Strengthening community-based GMP to prevent development and relapse of malnutrition (combination of strategies A and C)
2) Promoting community food security, dietary diversification and modification (combination of strategies B and D)
3) Expanding IMCI nation-wide and promoting community-based management of childhood illnesses (combination of strategies E, F and G)

The specific activities for these three components are spelled out in chapter 7 of this report. Components 1 and 2 are incorporated in Project 6: Community-Based Nutrition Management Project (CONMAP). Component 3 is part of Project 3: Promoting Community-Based Management of Childhood Illnesses (CBMCI).

6.3.6 Miscellaneous Considerations

1) Range of beneficiaries
Because poor nutrition is such a common problem of children in Malawi, the Master Plan should cover as many children as possible. In this context, as GMP has the potential to reach all children under five—both malnourished and well nourished—it is the best route to reach the widest range of beneficiaries.

2) Capacity building for detection of underweight children at the community level
The current GMP can detect underweight children but individual records are kept only on the under five health cards, therefore, unless caregivers return the child to GMP, there is no possibility for follow up. The first step in making people aware of the malnutrition in their community is to know the actual status of the children in their village. Therefore, it will be necessary to introduce mechanisms for record keeping and follow-up in the community.

3) People's understanding, ownership and participation regarding the control of malnutrition
MOHP anticipates that all adult villagers will help with community gardens, but it is unlikely that people will be willing to participate without incentives. Because the simple distribution of supplementary foods to households has failed to reduce the number of malnourished

children as a whole, the community gardening programme is to be combined with the community-based feeding incorporated in the BMHI.

Some government officers believe that the concept of community gardens will be readily accepted because they were once a part of traditional society. However, current generations have not experienced this tradition, therefore it is very important for villagers to place priority and reach a general agreement on improving childhood nutrition and mortality. Villagers must work together to understand the extent of the problem, and then develop their own solutions. People should be encouraged to participate in the measures addressing malnutrition from the early stages in order to secure ownership and commitment.

4) Acute shortage of supplementary foods

As mentioned, WFP quit supplying supplementary foods to communities through GMP at the end 1998. This sudden decrease in total food available in the community may have a serious impact, the same as a drought or an influx of refugees. MOHP plans to cover as much as 35 percent of the total caloric requirements for children by promoting community gardening in 80 percent of villages by 2004. The increased production of maize and soy beans is expected to be used as supplementary foods.

5) Lack of skills to manage nutritional supplementation in communities

After awareness raising when a community starts practising community gardening and feeding programs, the next steps are critical: mobilising people for cultivation and harvesting, selling a portion of the crop, managing finances, purchasing seeds and fertiliser required for the next season, preserving and distributing supplementary foods, and daily cooking and feeding. Responsibilities will have to be divided among committee members or volunteers, and sound leadership and organisations skills will be required. It will be essential to enlist appropriate leaders and committee members and provide on-going participatory training in weak areas. The goal of training will be to help people build self reliance and leadership capacity.

6) Need for feeding centres and warehouses

After a community has demonstrated success in running its feeding program, the building of a special storehouse or a feeding centre should be considered. The limited resources may be wasted if the construction of buildings precedes the substantial activities.

7) Expansion of IMCI and promotion of community-based integrated management of childhood illnesses (CBMCI)

The government plans to expand IMCI to all health facilities across the nation by 2004. But this plan still will not bring benefits to people who live in villages located far from health facilities. Promoting the same kind of health service at the community-level would help to alleviate this inequity. Whether a community places a high priority on CBMCI will likely depend on its location. It is probable that in remote areas, motivation of both beneficiaries and health workers/volunteers is strong enough to effectively carry out the plan. However, at the same time, both supervision and drug supply will be much more difficult to such areas.

6.3.7 Possible Constraints

1) Shortage of national budget for implementing the Master Plan

Chapter 7 includes the project budgets for carrying out the activities proposed under the Master Plan. At present, the actual budget allocated for these activities is far less than the amount required for nation-wide implementation. MOHP should request additional funds from MOF and multilateral/bilateral donor agencies, and co-ordinate all activities under the Sector-wide Approach policy.

2) Further spread of HIV/AIDS among adults

The pandemic of HIV/AIDS among adult Malawians directly increases the number of HIV-positive children. It also has several indirect negative influences on many children's nutrition and health, through the sickness and death of parents, losses in productivity and income, and the fewer number of health workers. If the AIDS virus gets out of control, the series of interventions in the Master Plan may have little effect. However, in spite of HIV/AIDS, improving nutrition in children must be given priority and efforts must not be suspended.

3) Limited success in promoting family planning

Birth intervals and the number of under five children in a household are both related to a child's nutritional status. Family planning therefore has a direct impact on childhood nutrition. However, despite the degree of success in current family planning programmes, the Master Plan is still important for improving the nutritional status and controlling diseases among children.

4) Weak drug supply and delivery system

Until recently, unstable drug supplies to health facilities and DRFs have prevented them from properly carrying out their tasks. HSAs and retired health workers have started to prescribe several basic drugs at no cost under the BMHI scheme. However, promoting IMCI nation-wide as the Master Plan recommends will further increase the demand for drugs. Reforming the drug supply system is an essential prerequisite to commencing this intervention on a large scale. If reformation of the government supply channel is delayed, it might be best to utilise the drug distribution structure established by wholesalers and groceries for the time being. The mobilisation and training of shopkeepers to control diseases in the community is described in following sections of this chapter.

6.3.8 Targets by Year

1) Targets by the second year

- Feedback referral from NRU to community health workers introduced
- Additional GMVs recruited
- GMP logbooks distributed and GMVs trained on how to register underweight or high risk group children.
- Data collection by workers started

- Prioritised areas/villages for introducing community gardening established
- Community ownership developed through the targeting process
- Case study completed in the area where the gardening programme was launched
- Candidates for training in capacity building identified
- Trainers for management capacity building recruited and trained on a small scale
- Community gardening programme introduced to about 500 villages and successfully managed in about 250 villages
- Trainers identified and training materials prepared for expanding IMCI/CBMCI
- One-year training of IMCI practitioners commenced nation-wide using new textbooks
- Training of CBMCI practitioners in a few pilot districts (5 –10 villages) started using new textbooks

2) Targets by the fifth year

- Feedback referral from NRU to community health workers established
- Registration and follow-up home visits of underweight and high risk children implemented nation-wide
- More reliable statistics collected at the community level
- Management capacity building training operating on a larger scale
- Community gardening programme introduced in 3,000 villages and successfully managed in about 2,000 villages
- Gardening programme re-introduced in the 1,000 villages where initial trial failed
- Programme assessment carried out
- Community feeding centres active in about 500 villages, and integrated health posts or upgraded under five shelters built in about 100 out of the 500 villages
- IMCI successfully operating by all facility-based health workers in all districts
- Training of CBMCI practitioners expanded nation-wide, and the scheme introduced to 10 to 30 underserved villages in each district

6.3.9 General Evaluation

1) Necessity for community participation

This Master Plan requires changes in social behaviour. People in the community need to play a key role in many activities, rather than being passive beneficiaries of health services. It is expected that both villagers and authorities place priority on improving childhood nutrition and mortality. Current generations are not familiar with the concept of community gardening, even though it was popular in the past. The Master Plan aims at encouraging people to participate in the measures addressing malnutrition from the early stages in order to secure ownership and commitment.

2) Investing in the future

Childhood deaths are tragic, but also a waste of valuable resources. Reducing the number of unnecessary deaths of children can be viewed as an investment in the future human resources, as today's children will fuel the economy for decades to come. For the time being, implementation of the Master Plan will increase the total national health expenditure.

However, the unit cost per beneficiary is estimated to be quite modest (see the budget calculations in chapter 7).

The Master Plan has four major cost components: training of health workers and volunteers, agricultural inputs for gardening programme, increased consumption of drugs, and costs associated with improved supervision. In addition to increasing the governmental health budget, raising funds from donor agencies, mobilisation of volunteers, and expansion of self-reliant drug revolving funds should be seriously considered.

3) Top health priority

The IMR and U5MR of Malawi are among the highest in the world, and the high prevalence of malnutrition is the most important precipitating factor for childhood deaths. The National Health Plan lists both high mortality and poor nutritional status of children as major health problems to be targeted.

The Master Plan proposes to strengthen community-based GMPs and the feedback referral system, which would have impact on the prevention and relapse of malnutrition in children. It also proposes to promote community food security, dietary diversification and modification, which would contribute to improving the general nutritional status in communities.

The Master Plan proposes to expand IMCI nation-wide and to promote community-based management of childhood illnesses, which would reduce the morbidity and severity of childhood diseases, and lead to a reduction in malnutrition and mortality.

The shortage of supplementary foods for underweight children is an acute problem at present. MOHP plans to cover as much as 35 percent of the total caloric requirements for children by promoting community gardening in 80 percent of villages by 2004. Expanding IMCI to all 26 districts is one of the major strategies adopted in the National Health Plan.

4) Institutional framework

The Master Plan was discussed in detail with representatives from MOHP, MOA, and MOWYCS. As discussed above, the Master Plan's objectives and interventions are consistent with the National Health Plan.

6.4 MASTER PLAN OF OPERATIONS FOR REDUCING MATERNAL MORTALITY

6.4.1 Overview

The main objective of the second cycle study (the Study) on maternal health was to develop a master plan of operations to reduce maternal mortality (number of deaths per live births) in Malawi. The results of the Study were presented in chapter 5 of Progress Report II. This

Master Plan includes the following main sections: 1) Situation Analysis on Maternal Mortality and Morbidity, 2) Review of National Policy Framework, 3) Relationship between National Health Plan and the Draft Master Plan of Operations, 4) Problem Analysis, 5) Framework of the Master Plan of Operations which includes five separate components, 6) Monitoring and Evaluation, and 7) General Evaluation which explains the rationale for the plan.

6.4.2 Situation Analysis on Maternal Mortality and Morbidity

The maternal mortality rate in Malawi is one of the highest in the world. The commonly used figure of MMR, 620 per 100,000 LB, indicates that there are approximately 2,700 maternal deaths per year. The international disparity of maternal mortality is greater than that of child mortality: MMR of Malawi is 200 times greater than that of some of developed countries.

Although MOHP initiated several interventions such as antenatal care clinics and training of traditional birth attendants well before the magnitude of maternal mortality in the country was known, a more focused and targeted program addressing the problem of high maternal mortality is relatively new. The National Safe Motherhood Initiative started in 1993 and the National Strategic Plan for Safe Motherhood was published in 1995. The document is based on a number of studies on the situation of maternal mortality and morbidity, one of which is the Safe Motherhood Needs Assessment conducted in 1994.

As will be discussed in detail in the Problem Analysis, it is commonly understood that a high maternal mortality rate in a country is not caused by any single cause or factor. It is a product of various factors such as poverty, education status, and socio-economic status of women, effectiveness of health delivery system, availability of essential drugs, and skills and knowledge of health workers. These factors are interrelated and intertwined with each other, making it difficult for any single intervention to produce a large impact.

6.4.3 Review of National Policy Framework

The National Health Plan for 1999 – 2004 lists high maternal mortality and morbidity as one of four main health and population problems in the country, and women of childbearing age are the main target group for the Plan. The government ranks safe delivery services (both primary and backup services) as one of the priority health services for the coming five years.

1) Overall objectives of the National Health Plan pertaining to maternal health

Five out of eight medium-term objectives of the Plan are found to be directly relevant to improvement of the situation of maternal health:

- To expand the range and quality of health services focused on maternal health and children under the age of five years
- To increase access to health care facilities and basic health care services

- To increase, retain and improve the quality of trained human resources, and distribute them efficiently and equitably
- To provide better quality health care in all health facilities
- To strengthen collaboration and partnership between the health sector, communities, other sectors, and private providers

2) Targets of the National Health Plan
The following two targets concern the issue of maternal health:

- Maternal mortality reduced from 620 to 310 per 100,000 live births
- Neonatal mortality rate reduced from 55 to 40 per 1000 births

3) Strategies of the National Health Plan
Four main strategies were adopted to achieve the targets in the Plan:

- Strengthen advocacy and IEC
- Provide equitable access to quality maternal and neonatal care
- Strengthen capacity building for safe motherhood
- Promote research in maternal and neonatal Care

6.4.4 Relationship Between National Health Plan and the Draft Master Plan

The Master Plan should not be either a parallel health plan to the National Health Plan or a proposal for vertical health projects independent from the efforts of government or other donor agencies. The Master Plan was developed within the framework of the National Health Plan and should be seen as an interpretation of proposed strategies and activities described in the Plan based on the results of the Study.

However, in some exceptional cases, the draft Master Plan proposes interventions that are not found in the National Health Plan. They are included because they were judged important after extensive discussion with technical experts and government counterparts.

6.4.5 Problem Analysis

The factors influencing maternal mortality in Malawi were analysed and the results presented as a problem tree attached. This analysis did not intend to identify the causes of individual maternal mortality but rather of the overall high mortality rate of the country.

Although a woman is exposed to maternal death only after she gets pregnant, contributing factors exist even before the pregnancy. During this exercise, we identified four main contributing factors of high maternal mortality:

1) complications associated with pregnancy are prevalent

2) complications during pregnancy are not controlled
3) many pregnant women do not receive EOC at a health facility
4) many women with complications do not receive proper emergency obstetrics care.

For each direct factor, the underlying factors are described below.

1) Complications associated with pregnancy are prevalent
The general health status of women in Malawi is substandard. Chronic malnutrition coupled with frequent pregnancies, infectious diseases such as malaria, and the heavy physical burden of household chores and farming work aggravates the health of women.

Frequent pregnancy itself can cause complications. Women in Malawi get pregnant at an early age, then repeatedly get pregnant until their later years. TFR of 6.7 indicates the very high number of pregnancies most women experience during their lifetime. A woman does not face the risk of maternal death until she becomes pregnant. Therefore, a reduction in the total number of pregnancies through family planning would certainly reduce the maternal mortality rate.

2) Complications during pregnancy are not controlled
In order to control complications properly, they must be identified as early as possible. The risk approach on the basis of age, parity, and previous obstetrics history has reportedly not been as effective it could be, yet one should not underestimate the role of ANC in identification and management of high risk pregnancies. ANC is believed to be more effective in identifying and preventing chronic conditions such as anaemia and STDs. In Malawi, although most pregnant women receive antenatal care at least once, disturbingly, many cases of high risk and chronic conditions are undetected at ANC. Ineffective ANC is caused by various factors such as lack of detecting skills of health workers, substandard quality of ANC examinations, and little time allocated for individual examinations and counselling.

Even where ANC is functioning properly, if women do not visit ANC as scheduled, then high risk pregnancies and complications are not likely to be detected or treated. In the Study, evidence showed that a large number of women visit ANC less than they should. According to qualitative research, some women are satisfied with just one visit once they are told that they and the baby (foetus) are healthy. ANC messages including the importance of keeping a regular ANC schedule are not well understood by all women.

Once identified, high risk pregnancies and complications need to be managed. Certain types of complications such as abortions/incomplete abortions need to be referred to a health facility for proper management. As approximately 20 percent of maternal deaths are caused by complications of incomplete abortion, the provision of proper management and the increase of service provision points would reduce the number of deaths.

Some women were found to have delivered at home or nearby TBA home despite advice given at ANC to deliver at a health facility. Women may find it difficult to follow the advice

due to financial, social or cultural constraints. Or she may simply not understand the importance of the advice and ignore it.

3) Many pregnant women do not receive Essential Obstetrics Care (EOC) at health facilities

According to WHO, EOC should include the following health services:

(At the health centre level)

- Family planning services
- Emergency management of haemorrhage, sepsis, and eclampsia by IV/IM drugs
- Vacuum extraction
- Manual removal of placenta
- Neonatal resuscitation
- Vacuum aspiration (MVA) or curettage for incomplete abortion

(At the referral level, in addition to the above)

- Administration of anaesthesia (for operation and resuscitation)
- Blood transfusions
- Caesarean sections and repairing of ruptured uterus
- Surgical sterilisation operations

Emergency care including caesarean section and administration of anaesthesia is discussed separately in the following problem description. An independent analysis was carried out due to the importance of emergency care in reducing maternal mortality. Neonatal resuscitation was not considered here because, although it is an important part of care, the procedure does not have a direct relationship on the survival of mothers. Also, family planning services and surgical sterilisation operations were not included in this discussion as these come under family planning which was discussed previously.

Three scenarios were explored in relation to the case of pregnant women not receiving EOC at a health facility. The first scenario is that a woman decides to deliver at home or TBA's home. Some women are pressured to make this decision by family members or because of their own concern over the care of their other children. The socio-cultural or financial environment often does not allow women to be away from home for the necessary care. Or some women are simply unaware that they are at risk and therefore opt for home delivery. Some women might have had bad experiences at health facilities in the past, causing them not to want to return. The physical condition of the health facility also discourages some women.

The second scenario was indeed frequently mentioned by women themselves: a pregnant woman had the intention of going to a health facility to receive proper delivery care, but she could not reach the health facility on time. Women are frequently not aware of their due dates or misunderstand the meaning of it. Sometimes, health workers at ANC do not tell a women her due date. In addition, the financial situation and social surroundings of women

do not allow them to leave home early enough to make it to the facility on time. One disturbing result of this scenario is the high incidence of precipitated delivery in Malawi.

The third scenario happens at health facilities. Women reach the health facility early enough, yet proper EOC is not provided. The most alarming and disconcerting problem is that some women are refused care at health centres by health workers.

The availability of health facilities with EOC is limited. Although not supported by concrete evidence, it is believed that most health centres are not capable of providing proper EOC. Health facilities are not necessarily equipped to provide EOC, thus reaching a health centre does not guarantee access to EOC. Lack of blood banks is another factor that aggravates the situation.

Health workers often provide a substandard quality of care even when women make it to an adequately equipped health facility on time. In some cases, it was reported that ward attendants provided care they were not qualified for due to the absence of health workers at the facility. The Safe Motherhood Project reports that many health workers lack the confidence to perform some types of essential care. Lack of equipment and supplies including drugs are occasionally responsible for non-provision of services.

4) Many women with complications do not receive proper emergency obstetrics care

As many complications are difficult to detect or prevent at ANC, emergencies often arise unexpectedly at the time of delivery. When something goes wrong during delivery in a village or at a health centre, then emergency referral of the woman is the only hope to save her and possibly the newborn's life. Delays in obtaining emergency care can occur at different stages: delay at home in making the decision to go to a facility, delay in getting to a referral facility, and delay in getting proper care at a health facility.

Delay in making the decision is caused by many interrelated factors such as lack of knowledge among caretakers, shortage of money, cultural beliefs, TBA's influence, and long distance to a health facility.

Delay in getting to a health facility is a product of communication problems, lack of transport (including cost), and distance. Many villages lack a rapid mode of communication to a health facility. Even in the event the woman is at a health centre, many are not equipped with a radio system to call for an ambulance from the hospital. Ambulances are only available at selected hospitals and they are often misused and not well maintained. In some cases, women need to wait more than five hours to be transferred.

The quality of emergency care was deemed to be another problem. The number of health workers with skills to perform emergency care is very limited. Caesarean sections can only be performed by doctors or clinical officers. An insufficient supply of drugs, lack of equipment and poor patient management are some of the factors contributing to the low quality of care provided at some hospitals. Some women die while waiting for a blood

transfusion. Lack of blood banks, misconceptions about blood donation and fear of HIV are some of the contributing factors.

The emergency referral system should not be based on unilateral communication from health centres to hospitals. It is important to provide feedback to referring health centres about the outcome of their referrals and the need for follow-up care. A proper feedback system would improve staff motivation and the quality of referral care.

6.4.6 Framework of the Master Plan of Operations (for Reducing Maternal Mortality)

1) Overall goal of the Master Plan

The overall goal of the Master Plan is reduction in maternal mortality by 50 percent by the year 2004.

2) Objectives of the Master Plan

As discussed in the problem analysis, the master plan is strategically focused on interventions addressing post-pregnancy causes. Therefore, the objectives of the master plan are:

- Increased access to improved ANC and obstetrics care
- Greater utilisation of improved ANC and obstetrics care
- Enhanced benefits of improved ANC and obstetrics care
- Improved behaviour in society towards safe motherhood through better recognition and awareness by communities and policy makers

3) Overall strategies of the Master Plan

The Master Plan has eight basic strategies:

- Developing the skills of health workers
- Implementing effective ANC
- Increasing physical access to EOC including emergency care
- Improving the obstetrics referral system
- Improving basic Infrastructure including communication systems
- Improving Information, Education, and Communication on Maternal Health
- Advocacy for Maternal Health
- Promoting research to broaden knowledge base on situation of maternal mortality and morbidity

4) Focus

Causes of high maternal mortality can be divided into two groups: pre-pregnancy and post-pregnancy. As discussed in the problem analysis, the poor health status of women including nutritional status and frequent pregnancy is the main pre-pregnancy cause. There is no doubt that by improving nutrition and reducing TFR, maternal mortality would decline.

However, the Study focused on post-pregnancy causes. This is not to minimise the importance of pre-pregnancy causes. MOHP in collaboration with donor agencies has taken a step to improve the family planning programme. Family planning however has no impact on the risk of death once a woman is pregnant. The high maternal mortality rate is a reflection of the high risk associated with each single pregnancy. Because most women want to have children and social pressure (especially by men) encourages women to have many children, the focus of the master plan was placed on the control of post-pregnancy causes.

5) Components of the Master Plan

The above eight strategies are grouped into five components. The objectives and strategies of each component are described in the following section. The five components are:

Component 1: Improvement of quality and availability of EOC at health facilities
Component 2: Implementation of effective antenatal care
Component 3: Improvement of basic Infrastructure at health facilities and increased number of facilities with EOC
Component 4: Improvement of the obstetrics referral system
Component 5: Improvement of Information, Communication, and Education activities on maternal health

Since a high maternal mortality rate is a manifestation of many causes at different levels, the five components are all interrelated. Although each could be considered independently for future implementation, the largest impact on maternal mortality will be obtained once all five are combined.

Component 1: Improvement of quality and availability of EOC at health facilities

Issues of quality and availability of EOC should be tackled simultaneously. Though emergency care was analysed independently in the problem analysis, it is included here with essential care. By definition, EOC also includes family planning services, emergency care, and blood bank services.

As government aims to increase the proportion of facility deliveries to 90 percent by 2004 and with the belief that delivery at trained TBA shelters would not be able to save women's lives once complications occur during labour, the role of TBAs needs to be redefined in the coming years.

Overall objective of component 1

Increased benefits from improved and more accessible EOC

Specific objectives of component 1

- Increased accessibility and availability of EOC
- Improved quality of EOC
- Increased use of health facilities for delivery

Strategies of component 1

- Refine care protocols for the five main causes of maternal death and anaemia and the protocol for normal delivery care
- Improve human resources in relation to decentralisation of the health management system
- Improve distribution of health workers
- Introduce incentives for health workers posted in rural areas
- Increase production capacity of health workers
- Improve availability of blood transfusions at district level
- Train health workers in interpersonal communication skills, stress management, facility management, EOC/ Life Saving Skills (LSS), and abortion care
- Conduct pilot study of cost-sharing and community monitoring system for ANC/ obstetrics services
- Redefine role of TBA
- Revise job description of medical assistants to ensure their participation in obstetrics/ANC services
- Post OB/GYN specialised clinical officer at all district hospitals
- Post OB/GYN specialised medical officer at all district hospitals
- Increase number of health facilities with EOC (all rural hospitals and selected health centres)
- Improve drug and equipment supply
- Promote research on maternal mortality and morbidity
- Strengthen hospital maternal deaths audit
- Provide masters level education for potential leaders in safe motherhood programme

The provision of full EOC including emergency care at all health centres would not be a cost-effective intervention given the relatively low incidence of maternal mortality at health centres. Under the proposed project for capacity building for health facility development planning, detailed plans for the introduction of EOC and levels of care will be developed prior to actual implementation. The plan will first be developed by MOHP with technical assistance by JICA for each district. The draft district plan will then be discussed and reviewed in detail with community and district health management teams.

Table 6.2 Time Frame of Activities for Component 1

Time frame	Activities
Year 1	Develop detailed district EOC implementation plan Conduct field research on medical causes of maternal death Complete baseline survey on obstetrics patient management Conduct maternal mortality and morbidity survey in selected districts
Years 2 & 3	Develop standard care protocol and training manual Start EOC implementation plan in two districts

Years 4 - 6	Begin EOC implementation plan for three more districts Train half of health workers in EOC
Year 7	Complete EOC implementation plan Evaluate activities

Component 2: Implementation of effective antenatal care
A major problem in Malawi is that although attendance rates at antenatal clinics are high, pregnancies with complications are often not detected or properly managed. It is important to take advantage of high attendance and provide proper care and advice at each level of care facilities. In this way, complications can be better controlled and women can be convinced to go to an appropriate health facility for delivery at the proper time.

Overall objective of component 2
Increased benefits of ANC

Specific objectives of component 2
- Increased awareness that all pregnant women are potentially at risk among community and women
- Improved management of ANC with focus on effective interventions
- Appropriate number of ANC visits per woman
- Increased awareness and participation in ANC by pregnant women
- Increased number of facility deliveries

Strategies of component 2
Target groups are health staff, pregnant women and their families. The major strategies are as follows:

- Improve quality of ANC by revision of ANC guidelines, staff training, and re-establishment of supervision system
- Establish model ANC clinic and introduce mechanisms to enable health centre level staff to consult with model clinic staff
- Increase availability of diagnostic tests such as haemoglobin, VDRL, and urine
- Increase availability of drugs and supplies required for ANC
- Improve interpersonal communication skills of health staff
- Disseminate messages on pregnancy and delivery complications

Table 6.3 Time Frame of Activities for Component 2

Time frame	Activities
Years 1 & 2	Conduct baseline study on ANC practice and capacity of health workers to provide antenatal care and counselling Research the major complications of pregnancy Develop/modify human resource database with training status Develop detailed training plan and conduct a geographical analysis of ANC quality based on the human resource database
Years 3 & 4	Develop new ANC guidelines and training modules and material Provide basic diagnostic kits according to the new guideline Start community mobilisation and IEC activities
Year 5	Train health workers in new ANC guidelines Equip all ANC staff with basic diagnostic kit

Component 3: Improvement of basic infrastructure at health facilities and increased availability of facilities with EOC

The analysis on basic infrastructure revealed that many health facilities lack water supply, electricity and radio communication systems, which are thought to be essential in providing EOC and other PHC services. The lack of basic infrastructure at health facilities is a potential indirect cause of high maternal mortality. The potential impact of improved infrastructure on quality of care and utilisation of health facilities by pregnant women is expected to be large. The three types of infrastructure identified here coincide with the three top priorities of the Ministry of Health and Population in the field of Health Facility Development. Health facilities identified in the National Health Plan will be given the highest priority for upgrading or rehabilitation.

Most health facilities are not capable of providing EOC. Women who desire EOC often walk more than one hour to receive the service. Even if a woman is at a health centre for delivery when developing severe complications, she will still need to be transferred to a referral hospital. Often, the district hospital is the only referral hospital in a district. To improve the situation, MOHP plans to upgrade rural hospitals to community hospitals so that all hospitals will be equipped with EHP, which includes EOC as a component.

Overall objective of component 3

Increased access and improved quality of EOC

Specific objectives of component 3

- All health facilities including MOHP, other ministries, and CHAM equipped with a water system (including hot water), electrical power lighting, radio communication, and an autoclave
- Selected number of rural hospitals upgraded to the level of community hospitals

- All dispensaries upgraded to the level of full health centres
- Improved maintenance capacity at district level
- Ambulances equipped with radio communication system

Strategies of component 3

This component aims for the rapid improvement in status of basic infrastructure at all identified health facilities and, at the same time, capacity building to maintain provided systems at the district level. Rural hospitals and dispensaries identified by the National Health Facility Development Plan will be targeted for upgrade.

- Update Health Facility Database to determine availability of basic infrastructure at health facilities (the current analysis was completed in 1997-8)
- Compile list of health facilities and required systems
- Determine level of functions of community hospitals
- Develop rehabilitation plan for community hospitals including physical requirements, fittings and equipment
- Install required infrastructure and upgrade health facilities
- Train district health office staff in maintenance and repair of the systems
- Evaluate impact of provision of basic infrastructure and upgrading of health facilities on maternal health

The National Health Plan counted 504 health facilities operated by MOHP, CHAM, and other ministries. Of these 504 facilities, 231 lacked a water system functioning as designed, 327 lacked electricity, and 358 lacked a radio communication system. Additional requirements are radio systems for facilities with a non-standardised system and ambulances.

MOHP proposes to upgrade nine dispensaries to full health centres and nine rural hospitals to community hospitals by 2004. In addition to nine rural hospitals, 17 health centres are proposed for upgrade to the level of community hospital by 2004.

Cost considerations

The National Health Plan estimates US$5,450,000 is required for establishment of linkages with ESCOM for 12 health centres, installation of 164 boreholes, 206 solar energy systems, and 185 radio systems at MOHP health facilities. In order to expand the provision to the facilities of other ministries and CHAM, an additional US$4,000,000 will be required.

The Plan also estimates an additional US$178.75 million for health facility rehabilitation and construction. However, this estimate includes the construction of two district hospitals, replacement of five district hospitals, rehabilitation of nine district hospitals and three central hospitals, construction of two health centres, and health staff housing.

Table 6.4 Time Frame of Activities for Component 3

Time frame	Activities
Year 1	Update facility database Determine level of functions of community hospitals and compile inventory of requirements
Years 2 – 4	Install all identified facilities with basic infrastructure Upgrade hospitals and dispensaries Train maintenance staff
Year 5	Evaluate impact of basic infrastructure on facility utilisation Evaluate impact of increased provision of EOC on maternal mortality

Component 4: Improvement of the obstetrics referral system

The referral system is classified into two types: routine and emergency. The routine referral system functions when ANC finds women with complications which can not be treated at health centres and refers them to a hospital for delivery or treatment. Emergency referrals are for more acute and severe complications, often requiring ambulance transfer and emergency medical intervention to save the lives of both mothers and newborns. Both referrals are based on bilateral communication between referring and referred facilities.

In Malawi, the obstetrics referral system is not functioning at an optimal level. ANC appears more effective in providing routine care for normal pregnancies, which is why most women visit ANC. Emergency communication and transportation are often delayed. The referral feedback system is virtually non-existent.

Overall objectives of component 4

- Proper management of complications during pregnancy (routine referral)
- Reduction in delays in obtaining emergency obstetrics care (emergency referral)

Specific objectives of component 4

- Increased number of appropriate ANC referrals
- Improved management of ambulance fleet with focus on dispatch of ambulances for emergency care
- Alternative models of referral established at community and health centre levels
- Improved understanding among community on ANC referral
- Referral feedback system established

Strategies of component 4

- Conduct campaign on ANC referral
- Train health workers (in-service) to identify risks during pregnancy
- Establish ANC monitoring system

- Develop clear guidelines for distribution of ambulances (at both national and district levels)
- Develop clear guidelines for prioritisation of dispatch of ambulances
- Train health staff on prioritisation of ambulance dispatch
- Monitor ambulance services
- Conduct operational research on alternative referral system between villages and health facilities
- Conduct operational research on Reproductive Health Handbook and referral system using the handbook

Table 6.5 Time Frame of Activities for Component 4

Time frame	Activities
Years 1 & 2	Develop ambulance guidelines Develop health education program
Years 3 & 4	Establish ANC monitoring system in three districts Conduct ANC campaign (twice per year) Complete operational research on alternative referral system Train health staff on ambulance dispatch Train health workers on risk identification
Year 5	Complete operational research on Reproductive Health Handbook

Component 5: Improvement of Information, Communication, and Education on Maternal Health

In order to reduce the high maternal mortality rate (MMR), it is important to improve the quality of care provided at health facilities. But even when satisfactory maternal care services are available, women may not utilise them. Improving women's access to the health care services is as important as improving the quality of care to reduce MMR.

In addition to the problem of physical distance, there are other issues that prevent women from using available health care services. Examples of these constraints include socio-economic status, cultural beliefs, and community's perception of health facilities and attitude of health workers. To address these barriers, it is important to conduct health education for women, family members, and other community members.

Overall objective of component 5

Increased socio-cultural accessibility to EOC

Specific objectives of component 5

- Increased understanding of safe motherhood, gender issues, and women's rights among women, family members, and community members

- Increased understanding of women's health, women's rights, and gender issues by policy makers
- Improved level of skills among Malawian health workers in health education, communication, participatory methods, and others areas related to IEC

Strategies of component 5

- Conduct baseline studies to establish knowledge base of the social, cultural, and economic conditions surrounding women in relation to maternal health
- Design IEC activities
- Develop culturally acceptable IEC materials
- Establish linkages with policy makers, members of district/local administrative structures (DDC, ADC, and VDC), village youth groups, religious leaders, and village chiefs
- Train identified providers of IEC messages
- Establish system of community audit of maternal deaths
- Train policy makers on women's health, women's rights, and gender issues
- Increase human resources through provision of higher training on IEC activities

Table 6.6 Time Frame of Activities for Component 5

Time frame	Activities
Year 1	Identify partners Conduct baseline surveys in two districts Development of IEC activities
Years 2 & 3	Start IEC campaign at national level and in two districts Implement community audit of maternal deaths audit in 20 villages Hold two advocacy workshops with policy makers
Year 4	Evaluate IEC programme and materials Revise materials and curriculum Extend IEC activities

6.4.7 Monitoring and Evaluation

Constant monitoring of implementation and revision of plan according to monitoring results are crucial to achieve the intended results. Progress is ideally monitored by the routine health information system, but two factors make this difficult in Malawi in the immediate future. One factor is the limitation of the facility based information system in monitoring trends of maternal mortality. Using proximity indicators, which can be obtained from the facility based system, and introducing a community based information system are both necessary to effectively monitor the Master Plan. The other factor is the weak health information system itself. The Master Plan includes strengthening the Reproductive Health Information System as a strategy. The Reproductive Health Information System will be

integrated into the Health Management Information System in the near future. In the meantime, monitoring will rely on surveys and sentinel surveillance.

6.4.8 General Evaluation

1) Social change

Throughout the study it was pointed out that women know that each pregnancy carries some risk and most of them prefer facility delivery, yet social and economic circumstances do not allow them to take advantage of available health services. The Master Plan recognises the fact that social changes are required in order for more women to receive appropriate health services in time to save her life or from severe complications. The Master Plan attempts to bring about this social change by strengthening IEC for women's health and raising awareness on gender issues.

Effective social change would require changes in health services to meet increased demand for both quality and quantity of health care. Therefore, on the supply side, the Master Plan attempts to improve the attitudes and skills of health workers as well as the availability of essential obstetrics care.

The impact that the death of a mother has on the social well being of surviving family members, especially children, cannot be overemphasised. Complications due to pregnancy and delivery also damage the lives of women both physically and psychologically. Therefore, improvements in social understanding and measures to prevent unnecessarily deaths and complications, as the Master Plan proposes, would have a huge social impact.

2) Women's contribution to the economy

In Malawi, women are productive members of society, particularly contributing to farming activities. Therefore, successful implementation of the Master Plan would have a significant economic impact by saving unnecessary deaths or permanent complications of women.

3) Investing in the established health system

The Master Plan has three major cost components: development of skills of health workers, improvement of health infrastructure, and strengthening of IEC. According to assessments completed for the Study, the level of human resources and infrastructure are not satisfactory to provide quality care. Investments in both areas are justified as they are aimed at improving the existing health delivery system.

The Study identified that women who do not deliver at health facilities have a higher chance of having complications or dying. Promotion of health facility delivery in a timely manner can be justified on the basis that it encourages the effective use of the existing health system.

The Master Plan also proposes to improve the communication skills of health workers. This should encourage greater usage of health services not only by expectants but also the

general public. Similarly, improvements to the referral system and health facility infrastructure are expected to bring overall health benefits to the general public.

4) Addressing health sector priorities

The MMR of Malawi is one of the highest in the world. One in 29 women die due to pregnancy related causes and more women suffer complications. The National Health Plan lists high maternal mortality as one of the four major health problems of the country. In addition, improvement of health infrastructure, especially provision of water, electrical power, and radio communication, are three top priorities for health facilities in the coming five years.

Children are another main target group of the National Health Plan. The well being of a mother has great impact on the survival of her children. As the main caretaker of children, improving the health of mothers would have great impact on the well being of children.

5) Cost-effectiveness and efficiency

A reduction in the fertility rate would have a great impact on maternal mortality. There are several national initiatives and donor supported projects devoted to family planning in the country. But with fertility and maternal mortality still so high, every single pregnancy is potentially at risk for maternal death or complications. With the strong social pressure on women to have many children, reducing the fertility rate is expected to take time. Therefore, together with family planning, medical interventions aimed at post-pregnancy risk factors are necessary to reduce maternal mortality.

6) Geographical equity

At present, access to health care services in the country is not equal. As discussed in the prioritised projects for improvement of health infrastructure, the condition of health services provision varies from district to district. The development of skills of health workers in providing EOC and improvement of infrastructure have been implemented in the Southern Region with support from the DFID. In order to bring equity in access to health services irrespective of geographical location, MOHP needs to expand its effort to improve health services in the disadvantaged districts. This plan supports this effort.

7) Institutional framework

The Master Plan's objectives and interventions are consistent with national health policies and plans, including the recent move towards decentralisation. The Plan was discussed in detail with representatives from the National Safe Motherhood Programme, donors and technical experts, and their contributions were incorporated.

The National Safe Motherhood Programme is one of the most well-organised programmes in the country. It has published various technical papers and developed policies related to safe motherhood. Staff at the national level are small in number but devoted. They have been providing various training courses for health workers. MOHP has recently discontinued the regional system in the health service management structure and started shifting management responsibilities to the districts. With this shift, the central programme is expected to provide a more normative (policy-making) and technical role. Therefore, the

plan of further strengthening the institutional capacity at the central level supports the new structural arrangement and should have impact on ensuring quality and quantity of health services.

6.4.9 Final Remarks

Some may argue that focusing on maternal mortality goes against MOHP's efforts in integrating various primary health care activities. The same argument was raised and debated among members of the JICA PHC study team. The general conclusion was that the causes of high maternal mortality are often the same as the causes of high childhood mortality, so an improvement of the health system from the aspect of maternal health will bring improvement to the health system as a whole. There is no doubt that some of the problems being addressed are maternal mortality specific, yet saving mothers from dying or falling into a permanently disabled condition due to complications of pregnancy and delivery will certainly have positive impact on the health of children, who are another target group of this development study.

6.5 MASTER PLAN OF OPERATIONS FOR IMPROVING THE ROLE OF INFORMAL DRUG SELLERS IN COMMUNITY-BASED HEALTH CARE

6.5.1 Background and Problem Analysis

Since licensed pharmacies are found only in urban areas of Malawi, most rural households who do not use government or CHAM health facilities resort to other sources of drugs. The first and second cycle household surveys found that people in rural areas use drugs bought from groceries and kiosks without any medical consultation more than any other source of treatment for acute illness events. There are at present approximately only about 250 village-level Drug Revolving Funds (DRFs) in Malawi, but there are thousands of small shops and vendors which sell "over-the-counter" medicines along with other goods. There are two related main reasons for improving these providers of health care. The first reason is that these shops are widely distributed, well-used, and stable sources of commercial medicines, and with certain improvements could become an effective mode of promoting primary health care. The second reason is that the current patterns of drug usage can lead to the risk of potentially serious individual and public health problems.

1) Malaria treatment and morbidity

It is difficult to characterise exactly the effects on morbidity from malaria resulting from the prevalent use of non-prescribed drugs in Malawi, but the major problem at present is under rather than over-use of first-line antimalarial drugs. One study found that only 52 percent of

caretakers brought their febrile children to a clinic, and that only 42 percent of those not attending a clinic had given their child an antimalarial drug.[1] Optimal therapy (administration of the proper dosage of an antimalarial drug promptly) was received by only seven percent of febrile children, with children who were taken to clinic being twice as likely to receive optimal therapy as non-attendees.

More recent data on children admitted with cerebral malaria hints at a relationship between drug use and malaria morbidity. Only 28 percent of those admitted had received SP. About twice as many patients had received aspirin or another drug (including other antipyretics) as SP prior to admission. This data suggests that many cases advance to a dangerous stage due to sub-optimal therapy and/or lack of timely referral.

2) Drug supplies in Malawi

Government supplies of drugs (i.e., free at health facilities and at cost through DRFs) remain extremely low, at about US$0.80 per capita per year.[2] The Central Medical Stores (CMS) has had a recent history characterised by financial difficulties followed by intensive technical and financial assistance, in repeating cycles. In contrast, sales of commercial non-prescription medicines probably exceed this figure by a factor of five or more. Furthermore, drug prescribing practices in general in Malawi, even in the public sector, are described as very poor.[3]

There are clear laws in Malawi regarding who can sell particular medicines. Drug sales are regulated by existing legislation, in particular the Pharmacy, Medicine and Poisons Act No. 15 of 1988 and the related Revised Regulations No. 40A of 1998. Three classes of drugs are specified: General Sale, Pharmacy, and Prescription Only. These lists are reviewed annually. The list of "General Sale" items is limited to "harmless" analgesic/antipyretics, antacids, cough mixtures, and antimalarials, which can be sold by general merchandise establishments.

There are several informal sources of drugs in Malawi:

Drug vendors (hawkers): MOHP policy is to maintain the quality of drugs available in Malawi and prevent the exploitation of the population, but the itinerant drug vendors are serious offenders in this respect.

Village groceries: Groceries and kiosks legally sell drugs on the General Sale List (GSL). The owners of these places are considered to be relatively well-informed people who are in a legitimate business, and they are seen as potential allies in improving the use of the drugs they sell. However, questions were raised about the knowledge of shopkeepers and their interest in giving the correct advice to customers. In addition, MOHP policy is to prohibit the

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[1] Slutsker L, Chitsulo L, Macheso A, Steketee RW. *Treatment of malaria fever episodes among children in Malawi: results of a KAP survey.* Trop Med. Parisitol. 45 (1994) 61-64

[2] Hilbrand Haak, Malawi Essential Drugs Programme, recommendations for MEDP Extension 97-98. World Bank aide-memoire, 1997 (draft).

[3] Ibid.

shopkeepers from selling any drugs from bulk packages (i.e., dispensing), and to prohibit the sale of antibiotics and other potentially dangerous medicines.

Drug Revolving Funds: Along with the increase in the number of HSAs, community drug revolving funds are evolving into an important element of the health system in Malawi. The World Bank is supporting this effort, as are other bilateral donors and many NGOs. The DRF plan depends heavily on reforms occurring within CMS, which will ensure a more reliable supply of drugs to MOHP and the DRFs than in the past. The DRF system is not well-integrated into the overall MOHP system because drugs are free at public health centres and hospitals but not at the community level, so people tend to avoid using DRFs and still go to health facilities when otherwise it would not have been necessary. There are only 250 DRFs estimated in existence in Malawi.

Presidential health initiative: A further issue has arisen due to the recent presidential initiative (Bakili Muluzi Health Initiative) that promises free drugs to the poor. Although this is an important ideal in terms of improving equity of access to health care, it poses major financial, logistical, and policy problems, including concern about safety and storage conditions, and whether this will increase resistance to certain drugs. The large number of places that meet the criteria where drugs would have to be distributed will present major challenges.

3) National policy framework

There are definite laws in Malawi regarding who can sell particular medicines. Drug sales are regulated by existing legislation, in particular the Pharmacy, Medicine and Poisons Act No.15 of 1988 and the related Revised Regulations No.40A of 1998. Three classes of drugs are specified: General Sale, Pharmacy, and Prescription Only. These lists are reviewed annually. The list of "General Sale" items is limited to "harmless" analgesic/antipyretics, antacids, cough mixtures, and anti-malarials, which can be sold by general merchandise establishments. (All drugs on the "Pharmacy" list can be sold by private clinics but only if the clinics is legally licensed by the relevant professional organisation.)

There was considerable encouragement expressed by the MOHP drug regulation and PHC offices for working with groceries and kiosks that sell drugs. The owners of these places are considered to be relatively well-informed people who are in a legitimate business, and they are seen as potential allies in improving the use of drugs. The shoopkeepers could also be a more effective source of information about health and illnesses, providing better and more consistent advise to mothers, for example about potentially dangerous illnesses. District health team also through that there was good potential for improving practices of drug sellers.

6.5.2 Study Conclusions and Implications of the Second Cycle

Detailed study methodology and findings of the second cycle were presented in chapter 4, and their conclusions and implications are as follows.

1) All four research components verified that a large majority of rural Malawians rely on groceries as a primary source of medicines. The main reason for this is their proximity. In addition, it may also be true that there is less social distance between villagers and shopkeepers than between villagers and health facility staff. The range of drugs groceries can sell is fairly limited by law, but nonetheless is probably in line with the current demand patterns (i.e., for analgesics).

2) Drug revolving funds are preferred to groceries where they have been established, in large part because of lower prices for popular items like aspirin, and also because some antibiotics are sold. However, the long-term viability of DRFs has not yet been demonstrated.

3) Shopkeepers are generally trusted by the majority of ordinary patients. However, there is a negative bias towards them among Village Health Committees and other people who are involved with the DRFs, which are in competition with them.

4) Both the knowledge and practice of shopkeepers with respect to appropriate treatment of childhood malaria and ARI (and also diarrhoea although this was not a focus of the study) leaves much to be desired. IEC printed material is almost non-existent at shops, and in any event low literacy levels would limit its effectiveness. Most shopkeepers will sell whichever drugs the caretaker/customer requests, but the caretakers' knowledge is often inadequate as well. Most shopkeepers are aware of the common childhood diseases, at least to the extent to be able to recommend a drug.

5) Antibiotics are extremely popular and widely available in groceries even though their commercial sale is illegal. It is certain that most of the time, the use of antibiotics sold through shops is inappropriate and perhaps dangerous, but it cannot be definitively stated that the availability of antibiotics does more harm than good. On the other hand, Fansidar (SP) which can be legally sold, is not widely available.

6) Regardless of the MOHP policy that shopkeepers do not "prescribe" medicines, in fact they fill the gap between the caretaker's knowledge and the end purchase of medicines for many, if not most, sick children. Shopkeepers expressed a willingness to receive training that would make them more effective in this role.

7) The training of shopkeepers would initially concentrate knowledge in a relatively few community members, much as training VHVs and HSAs has done, but this knowledge could be effectively disseminated to the community each time a purchase is made. Improving community awareness of the dangers of malaria, diarrhoea and ARI, and their correct modes of treatment is another important ingredient in improving community-level disease control. This should complement shopkeeper training.

6.5.3 Additional Findings

Further research and discussions were carried out during the third period of activities in Malawi (June to September, 1999). The following summarises the new information obtained, which lead to the modification of the strategies used in the Master Plan of Operations and the two prioritised projects related to drug sellers (project 3 and 4).

1) Other related activities and programmes

The Social Marketing Programme (USAID) has launched two new health products, "Thanzi" brand ORS, and impregnated bednets. "Thanzi" will be registered for the General Sale List, marketed by the commercial distribution system in Malawi, and in principle sold in groceries. The SMP does not plan any training of shopkeepers, but would welcome it and will co-operate in this area. Incorporating a training module on diarrhoeal diseases for shopkeepers would be a suitable complementary activity to the one focusing on malaria.

The Malaria Control Programme has included shopkeeper training in their plan of action as a community-level intervention in case management, and has also designed and printed a poster that shows a mother asking for SP at a grocery (Fig. 6.1). It has no committed funding for this component however.

The Kenya Shopkeeper Training Programme has made its training materials (for improving malaria treatment) available to Malawi. These can easily be adapted to the situation in Malawi, saving much time in training material development.

2) Market-related information

Poor households spent on average just 10 percent less on drugs than medium or better-off households. This means that the poor would benefit at least as much as the non-poor by purchasing more effective treatments for their children.

No verified side-effects of SP have been found in Malawi, pointing to the possibility that high price is the main reason for low utilisation. The price of the locally produced Novidar-SP has been increased to MK25 for a 3-tablet strip.

The price of bulk packaged SP is only $US0.03 per tablet, which is about 1/6 the price of Novidar-SP in strip-packs. It was learned that before Novidar-SP was marketed, MOHP had arranged with one of the large wholesalers to distribute hospital-packed SP through commercial channels, which could have been the source of the bulk SP found in the field survey. Mr. K.V.Gopal, Group Chairman of the Sterling Group (which includes Pharmanova) agreed in discussions in Blantyre to producing a "child packet SP" (a single tablet with an outer wrap containing local language instructions) which could be marketed at a price close to MK4, provided the publicity for the introduction was included in the JICA project.

Fig. 6.1 Poster Used in Malaria Control Programme for Improvement of Drug Sellers' Role

3) Additional MOHP Input

The concern that training might impart the shopkeepers with confidence to become prescribers was expressed again. The project should not encourage dispensing in any way; only strip packed drugs are approved for the GSL. The level of training given to VHCs is seen as appropriate for shopkeepers, with the exception of eye ointments.

The project should treat the reduction in antibiotic use as a priority objective. Messages about not selling antibiotics should be emphasised, and any shopkeepers who benefit from training should be required to not carry antibiotics. This same message should be included in any civic education messages.

The proposed project should create a capacity for monitoring the impact of the training, including random checking of shops. An existing mechanism, the Illicit Drugs Handling (IDH) taskforce can be enlisted to help meet these objectives.

It would be desirable for this project to have as wide a coverage as possible. No districts should be excluded, but training should be prioritised on the basis of whether a health facility or a DRF exists nearby. There are currently only about 250 DRFs, and the current plan calls for immediate expansion to 1000, and eventually more. This means that the great majority of Malawi's 46,000 villages will have no DRF.

4) IEC strategies and media

The experience of several other development projects in health and other sectors generally confirms that development must be demand-led, in the sense that improving access to a given service or product does not ensure greater use or consumption. There must be an actual felt and expressed need for a given intervention, whether it be a new health technology or an agricultural innovation. This demand in turn arises from individuals and communities that possess the new information that relates the innovation to their felt need.

Although the main objective of this Master Plan is to change shopkeeper's behaviour, its real purpose is to change individual behaviour – people should be trained to use SP more frequently for child fevers, to use less antibiotics; to refer sick children, etc. More emphasis will therefore be placed on public education than in the previous version of the project. Efforts will be concentrated on using modes of communication which are known to be the most effective, such as radio messages and face-to-face communication. Television can be used when it becomes available, and the possibility of using mobile video vans should be further explored. Print media such as leaflets, posters, and newspaper advertisements have been demonstrated to be largely ineffective in Malawi and will be used minimally and only where appropriate.

A meeting was held in Blantyre with Mr. Verson P. Idi, Ass't Controller of Business Affairs of Malawi Broadcasting Corporation. The rates for airtime and other services were discussed, and he confirmed that this type of message would be welcomed by the public and MBC.

The use of mass media for disseminating the main informational messages introduces problems related to the geographical coverage of the activity, which are addressed below.

6.5.4 Framework of the Master Plan of Operations (for Improving the Role of Informal Drug Sellers in Community-Based Health Care)

1) Overall goal of the master plan

The overall goal of this master plan is reduction in child mortality and morbidity due to key diseases

2) Objectives of the master plan

- Rural shopkeepers trained so that they can play a more active role as primary health care providers by selling appropriate drugs and giving advice to mothers and other clients

- Communities empowered by being providing with information about correct self-medication for child illnesses with legal over-the-counter drugs, and identification and referral of serious cases

3) Justification

Small groceries are seen by many as an inferior mode of essential drug supply, with the inherent private profit seen as a negative feature. However, compared to the most favoured alternative, DRFs, groceries have some important advantages:

- Groceries already exist in most villages (46,000), whereas there are only 250 DRFs now, perhaps 1,000 in two years.
- Shopowners earn a living from their activity but the DRF scheme depends on volunteers.
- Groceries have a stable supply network of many distributors and wholesalers, but DRFs depend on CMS for resupply.

DRF drug prices are very cheap. Grocery prices include profit margins for retailers and distributors, but are affordable. Nevertheless, the pattern of drug sales through both sources is similar, with greatest demand for analgesics.

4) Geographical coverage

By nature, mass media reaches a large number of people. In Malawi, there is no feasible way to limit messages to certain geographical areas, although use of FM broadcasting would be essentially limited to the main urban areas, but the primary target of this project is rural areas. On the other hand, shopkeeper training and monitoring can be focused on specific target areas, the number of which would be limited by the budget and other resources available.

5) Overall strategies of the master plan

The overall strategies of the Master Plan are:

- Public education through mass media: nation-wide, through AM broadcasting on Malawi Broadcasting Company
- Shopkeeper training: in most districts according to priorities and available resources
- Monitoring activities and results: in all districts

6) Activities of the master plan

The activities of the Master Plan are grouped into three components:

a) Storekeeper training
b) Public education through mass media
c) Monitoring activities and results

Sub-objective for component a)

Grocery owners sell more appropriate drugs and give more accurate advice about selected childhood illnesses

Activities for component a)

- The technical content to be transferred to shopkeepers should be agreed by MOHP. This will require a workshop at the central level, with participants from concerned departments of MOHP and the Drug Control Board.
- A clear policy on enforcement and penalties concerning illegal drug sales should be elaborated by MOHP and the IDH Task Force.
- Field visits to similar projects in east and southern Africa will be made by key project staff.

A monitoring/evaluation system will be established for comparing the changes in drug usage and morbidity/mortality in project districts and control districts.

Because of the large number of grocery owners that will need to be trained, it will be necessary to first train groups of trainers/monitors. The people to be trained as trainers could include existing regular and volunteer health personnel, such as HSAs and VHVs. From two to four trainers of drug sellers will be trained per district.

In addition to the actual technical content on childhood diseases and appropriate drug use, the training of trainers will include training skills. The curricula will need to be developed by local and external experts, and tested prior to the training. Representative shopkeepers and wholesalers will be asked for input. Some training materials are available from the KEMRI project in Kenya.

IEC materials (posters) for distribution to the retailers will be developed and prepared prior to the TOT sessions.

The two-week training of trainers workshop will be held centrally or regionally.

Various options for the payment and reward (i.e., certificate, announcements, etc.) will be attached to the shopkeepers' training. A rapid assessment study will be carried out on shopkeepers' willingness to pay for training. The result will be a fee schedule for training that will provide a degree of sustainability and not deter more that 10 to 20 percent of potential trainees.

After the trainers have been trained, the shopkeepers and wholesalers in a district will be contacted and invited to training sessions in the district centre. The number of participants will be kept low, probably not more than 20 per training session. The logistics still need to be worked out, but training sessions will take place in each district four to six times a year, depending on the total number to be trained. They will last no longer than four days.

Shopowners who are training candidates will sign a contract with the training program to not sell prohibited medicines.

The trainers/monitors will be given some form of mobility, and a monitoring schedule will be established for visits to retailers. The purpose of these visits will be to ensure that the desired products (such as SP) are available, that they are being sold appropriately, to update retailers with new information or refresh existing knowledge, and to evaluate training needs for new workers in the groceries and kiosks.

Local wholesalers will also be visited to ensure they have enough IEC materials and evaluate any problems that may arise in stocking and distribution of the essential products.

Other measures may be needed to secure the supply chain. An SP "child packet" of one tablet should be designed, with instructions in local languages. Incentives for reducing the price to wholesalers will be discussed, such as a mass media campaign.

Sub-objective for component b)
People become better informed about self medication and when children should be taken to a health facility

Activities for component b)
A component of the shopkeepers training sessions will be developed on communication skills. (This may be developed by the CBMCI project or another JICA project component).

Shopkeepers will then be able to explain why it is necessary for the child with suspected malaria to take SP, overcoming objections to side-effects and cost.

The specific messages to be conveyed to the public will be agreed on, with respect to referral for ARI and severe malaria rather than self-prescription of antibiotics and other medicines, increased feeding of liquids for diarrhoea, etc.

The most effective approach to community education for rational drug use will be researched, and the experience of WHO, and other programs such as the Malawi Contraceptive Social Marketing program will be examined. If there are no effective and practical mass media options for conveying the required messages, a more direct approach to community education will be devised. The participation of private sector importers, manufacturers and wholesalers will also be enlisted.

Once the medium and the messages have been decided on, the preparation and testing of the messages must be done, and the media prepared and implemented according to a regular schedule. An example of a reasonable schedule is given below:

- "Use SP for all instances of child fevers that do not diminish in 24 hours or that show a malaria pattern."
- "If your child has a cough, do not give any antibiotics. Give an antipyretic and cough medicine, plus fluids. If cough and fever persist, take the child to a health worker."

- "If your child has loose stools continue feeding and make sure he takes a lot of liquids. If the diarrhoea persists and the child shows signs of dehydration, give a sugar-salt solution (details) or buy "Thanzi" and prepare it for him/her. If the child becomes sicker, bring him/her to a health worker. Do not give any antibiotics.
- "The incorrect use of antibiotics is leading to serious health problems in Malawi. Using antibiotics when they are not needed or the wrong type has caused some of them to become ineffective. Only you cannot stop this problem – do not buy any antibiotics from shops or markets. Only use them when they have been prescribed or given by a health worker."

These messages can be conveyed as one or two-minute radio mini-dramas one or two times a day, each one running for four to six weeks on the MBC AM radio channels, with the series repeated during the length of the project.

In villages where health committees are active, these same messages should be integrated into the educational activities of the committees.

Sub-objective for component c)
Continuous evaluation and feedback on training and media message effectiveness and performance of shopkeepers

Activities for component c)
There will be continuous evaluation of the impact of the first two sets of activities. The behaviour of shopkeepers will be evaluated by visits to groceries by the NGO that implements the Shopkeepers Training Activity, or by members of a committee designated by the District Health Management Team and including a representative of the IDH taskforce.

The media campaign can be evaluated by pre- and post- KAP surveys on a random population sample in project and control (non-training) districts. The objective criteria for knowledge change is knowledge and correct interpretation of the messages. Actual behaviour change will be measured by means of a household-level rapid assessment conducted every six months, of actual childhood illness history. At semi-annual project meetings, the results of the evaluations will be discussed and changes made in the training curriculum and media messages.

6.5.5 Evaluation Plan

The advantage of this approach is that it becomes possible to evaluate the individual impacts of a) the shopkeeper training and of b) the mass media campaign, by comparing outcomes in project districts with non-project districts. Since the project districts will have received interventions a) + b), and the non-project districts will have received intervention a) only, comparison with a baseline of the outcomes in the non-project districts will measure

the impact of the mass media campaign by itself, while the difference in results between the non-project and project districts will represent the impact of intervention b) alone.

6.5.6 General Evaluation of the Master Plan

1) Improved knowledge and communication

Some changes in social behaviour by both shopkeepers and the general public are expected to result from the implementation of this Master Plan. The field study found that at present, the typical interaction between customers and shopkeepers at the time of drug purchase sees the customer requesting a specific medicine and amount, depending on the perception of the illness and the amount of money on hand. The customer/patient is normally aware of the illness or the symptoms for which medicine is desired. In most cases, the shopkeeper is not asked for advice, because customers do not believe that he/she has specific medical knowledge.

This Plan would increase the knowledge of specific diseases and medicines among drug selling shopkeepers and the general public. The public will also become aware that shopkeepers have received training in the correct use of the medicines that they can legally sell. This should open an avenue of communication in which appropriate questions and answers are exchanged, which is similar to the training and role of Village Health Volunteers.

2) Household savings

This Master Plan will result in a net economic benefit to consumers by reducing purchases of inappropriate and ineffective medicines. Considering the limited resources of most families, even a small savings on medicines will help families to better meet basic needs.

3) Cost-effectiveness and efficiency

The Master Plan will have two major cost components. The first, shopkeeper training, is expected to have minimal net costs because shopkeepers will be asked to pay a portion of the costs of their training. This can be justified since they will receive benefits from the training, which may eventually result in a greater volume of business from selling medicines.

The mass media component is highly cost-effective since the media messages will reach a very large number of people. The estimated cost of MK1.45 million for radio messages amounts to only about MK1.0 per head of a household whose behaviour may be changed by the messages.

4) Health evaluation

Better treatments as a result of the Plan are expected to have significant impact on malaria and other diseases, especially for children. In an analysis of data from the Malawi Malaria Control Programme (Welcome Foundation research study), the relationship between the lack of correct case management for childhood malaria and the rate of admission for cerebral malaria was found to be quite strong. In the JICA PHC field study, village groceries

were found to be the first-line source of treatment for about half of all rural households for common childhood illnesses, but the correct antimalarial drug was rarely purchased. Given the high infant mortality rate from malaria, the health impact of even small changes in drug purchasing behaviour would be significant.

There will also be an impact on other childhood diseases, especially respiratory infections and diarrhoea. Trained shopkeepers will advise mothers whose children have recognised signs of ARI to bring the child to see a health worker, where appropriate antibiotics can be given. The current social marketing program for Oral Rehydration Solution ("Thanzi") will also be reinforced by the media and training components, with attendant potential reductions in mortality due to better case management at the community level.

Reduced use of antibiotics is a major focus of the Master Plan. While there is no data available on the role of uncontrolled sales of antibiotics in resistance, it is assumed by the authorities that reducing their sale will slow the development of resistance.

Finally, as demand for less effective or harmful products decreases, the country as a whole will benefit from a substitution of imports of less effective medicines by more effective ones.

5) Priority concern

The control of sales of antibiotics and other dangerous drugs is considered a top priority by MOHP.

6) Institutional framework

This Master Plan has been discussed at length with concerned officials of MOHP, and the objectives have been brought in alignment with national policies, especially those of drug regulation. The objectives and interventions of this Master Plan are entirely consistent with the national health policy of improving the prevention and management of illness at the community level. At the grassroots level, groceries are by far the most widespread "health institution" in Malawi. Similar projects to enhance their effectiveness are now being carried out in Kenya and Uganda, and have been done in several Asian countries as well.

The national Malaria Control Programme has included shopkeeper training in their current Plan of Action, and the Primary Health Care Programme has also done training in the past, so it is not an unknown concept in Malawi.

It is also consistent with the national Social Marketing Programme, which is promoting bednets, condoms, and ORS through commercial channels.