

Consultancy Report

Review of UNICEF Support to Malaria Control in Zambia

UNICEF and the Malaria Consortium

**Jenny Hill
Jayne Webster
Mulenda Basimike**

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Executive Summary

The Malaria Consortium was contracted by UNICEF on behalf of the National Malaria Control Centre to undertake a review of the community based malaria prevention and control programme (CBMPCP) in four districts in Luapula Province, prior to expanding the programme to 28 districts in Eastern, Northern and North-Western provinces. It was also tasked to review UNICEF support to malaria control in Zambia in general, including the plan for expanding CBMPCP including capacity building. The work was undertaken by three consultants over a period of 66 days during July to September 2000. This report attempts to combine the inputs from each of the consultants. Details of specific terms of reference for each are provided in the methods section.

The review focused on the progress and processes of implementation, and did not attempt an evaluation of the programme's impact. Essential findings are that the programme has succeeded in developing significant capacity at community level, such that some communities have been empowered to make important, innovative decisions regarding management of the project. The programme has even succeeded in serving as a pathfinder for district based management structures within the reforms in projects where the relationship between the community (community agents, Neighbourhood Health Committees and Malaria Control Committees), staff at rural health centres and at district level (DHMTs) is working well. Two examples are Mambila community in Mwense District and Kambuali community in Nchelenge District. In general however, supervision and monitoring of the project was found to be poor at all levels. Management of the revolving fund in particular appears to be weak in almost all the projects for a variety of reasons, some of which can be improved through redistribution of tasks within the community structure. Suggestions to improve management and supervision of the projects include involving a wider group of partners at district level and improved monitoring and supervision at central level.

The sustainability of the revolving fund was threatened when the barter system was in place, due to the inability of communities to convert goods into cash. However, a removal of this system from the projects may be a major factor in the poor sales of nets among the target population, ranging from 15.4% in Samfya District (the original pilot district, initiated in 1994) to 2.5% in Nchelenge, and net retreatment rates are less than 1%. This and an independent review of CBMPCP reveal that most of the nets that have been purchased and used by men. A small, rapid household survey is recommended in order to determine barriers to purchasing nets, net use among target populations and to net retreatment. The cost recovery rate for the programme as a whole is poor, estimated at around 10%.

The emphasis of the programme has been on net sales and management of revenue from the sale of nets at the expense of IEC (for ITNS, including net retreatment, and home based management of malaria) and the case management arm of the project. It is recommended that malaria agents are retrained as community health workers, some of whom focus on IEC and handle basic drug kits. This should be implemented as part of the ongoing community based IMCI initiative, which receives support from USAID's Zambia Integrated Health Programme. Also within the framework of IMCI, health workers in rural health centres serving CBMPCP communities should receive training in IMCI and associated support.

Recommendations have been made to strengthen all aspects of the existing framework for CBMPCP, covering technical and management issues at all levels of the programme. A number of tools have been developed and field tested to streamline the monitoring of programme activities (Annexed to the report). Finally, a number of key outcome indicators, which are essential to the evaluation of RBM in Zambia as a whole, are proposed for evaluating programme impact.

In the light of the above findings, it is essential that NMCC and its partners, including UNICEF, review the strategy for ITNs in Zambia. Already a number of objectives and approaches have been developed in the RBM strategy, but given the scale of the proposed UNICEF support for ITNs and a number of new potential partners in the ITN arena, it is time to review the RBM strategy for ITNs. A prerequisite would be to establish a national ITN steering committee, which carried representatives of all the major players in ITNs in Zambia, including the private sector. The proposed UNICEF support (\$ 1 million) should be used to support a national ITN strategic plan, focusing on vulnerable groups.

Based on the findings of the review, it is recommended that UNICEF supports the piloting of three alternative strategies for ITNs, all of which aim to improve the targeting of pregnant women and children under five, before considering expansion of the programme. These can be implemented and evaluated in 2001, during which time the existing community projects are strengthened according to specific recommendations. Three different approaches to improve targeting of vulnerable groups will be explored in three 'new' districts. In the first, the impact of improved IEC strategies managed by the Society for Family Health will be determined, while maintaining the existing distribution mechanism for nets and insecticide and management of the revolving fund. In the second, nets and insecticide will be provided to vulnerable groups through ANC and MCH clinics at highly subsidised rates or, preferably, free (free treated net plus first retreatment) so that there is no financial management involved and no cost recovery. SFH manages the IEC component. In the third, it is proposed that SFH will provide procurement and distribution services as well as coordinating the IEC strategy. Where possible, nets are supplied to vulnerable groups at retail outlets based on the presentation of a valid health card and/or a voucher received at clinics. Of course, this is only feasible where there are retailers, but the network of retailers is likely to expand significantly in the near future. In the meantime, clinics will be the main outlet for treated nets and net retreatment.

It is proposed that the pilot projects are evaluated after a period of one year, and the findings used to redefine the framework of CBMCP prior to expanding to 28 new districts in 2002, at the start of the new UNICEF country programme cycle.

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List of Abbreviations

ANC	Antenatal Clinic
CBMPCP	Community Based Malaria Prevention and Control Programme
CBoH	Central Board of Health
CHW	Community Health Worker
CQ	Chloroquine
DHMT	District Health Management Team
FAO	Food and Agriculture Organisation
HIV	Human Immunodeficiency Virus
HMIS	Health Management Information Systems
IEC	Information, Education and Communication
IMCI	Integrated Management of Childhood Illness
IPT	Intermittent Presumptive Therapy
ITN	Insecticide Treated Mosquito Net
JICA	Japanese International Cooperation for Aid
KAP	Knowledge Attitude and Practice
MARA	Mapping Malaria Risk in Africa
MCC	Malaria Control Committee
MCH	Maternal and Child Health
MTCT	Mother to Child Transmission (initiative)
NGOs	Non Governmental Organisation
NHC	Neighbourhood Health Committee
NID	National Immunisation Day
NMCC	National Malaria Control Committee
RBM	Roll Back Malaria
RHC	Rural Health Centre
SFH	Society for Family Health
SP	Sulfadoxine-pyrimethamine
TDRC	Tropical Diseases and Research Centre
UNICEF	United Nations Children's Fund
WHO	World Health Organisation
ZIHP	Zambia Integrated Health Programme

1. BACKGROUND

The Community Based Malaria Prevention and Control Programme (CBMPCP) began as a pilot project in Samfya District, Luapula Province, in 1994 with support from UNICEF. The pilot project included three sites, these were the communities¹ of Kasanka, Mushili and Matongo. In September 1996, a mid-term review was conducted by the Malaria Consortium and UNICEF. This review made several recommendations, and concluded that overall the project was doing well, and that an evaluation should be conducted to guide the strategy for expansion. The evaluation was carried out in November 1997. Once again, although several recommendations were made to improve the project, the conclusions were positive. The evaluation recommended that 'the basic framework adopted [by CBMPCP] is appropriate for expansion...however, there are a number of possible variations on the existing model which may improve coverage and operational sustainability'². In 1998 – 1999 implementation was expanded to the rest of the communities in Samfya and to communities in three more districts in Luapula Province – Mansa, Mwense and Nchelenge.

The focus of the programme is on community-based sale of insecticide treated mosquito nets (ITNs) through community health workers³ (CHWs), capacity building of health workers in malaria case management through Integrated Management of Childhood Illness (IMCI), training of CHWs in malaria case management and community-based information, education and communication (IEC).

2. OBJECTIVES OF THE MISSION

The Malaria Consortium was contracted by UNICEF to provide technical assistance to key areas of the national malaria control programme in Zambia at a critical juncture. Firstly, the recently developed Zambia Roll Back Malaria strategy needs operationalising and secondly, the UNICEF support to community-based malaria prevention is undergoing rapid expansion. In addition, UNICEF Lusaka is preparing for a new country programme cycle and there is a staffing gap within the Health Section.

Specific objectives in the Terms of Reference were:

1. To conduct a rapid review of the progress and processes of implementation of the CBMPCP in the four initial districts in Luapula province (Samfya, Mansa, Mwense and Nchelenge) and make recommendations for the way forward.
2. To review UNICEF support to malaria control in Zambia in general, as well as the action plan for expansion of the CBMPCP to the 28 districts in Eastern, Western, North-Western and Northern provinces, and to make recommendations – in the light of recommendations from objective 1 above. The recommendations should also feed into the planning/strategizing process for UNICEF programming for malaria for the new country programme cycle.
3. To support the detailed action planning process to operationalize the national Roll Back Malaria strategy for Zambia (see attached document), in collaboration with key

¹ A community is defined as a catchment population of a Rural Health Centre

² Recommendation 7.2.1 in the report by Dembo Rath, A. and Hill, J. (1998) Evaluation of the Community-Based Malaria Control Project in Samfya District, Luapula Province, Zambia. Malaria Consortium Report.

³ A decision to call the Malaria Agents, CHWs was made recently by the Malaria Working Group.

partners in Zambia (NMCC, the Central Board of Health (CBoH), WHO, USAID, etc). Priority areas include nationwide scaling up of the ITN component, changing the antimalarial drug policy, capacity building (including scaling up IMCI implementation), advocacy and IEC. Review of the capacity building strategy and materials for the UNICEF-supported programmes.

4. To assess monitoring and evaluation systems and mechanisms for malaria programmes within the systems of the Central Board of Health/NMCC and make recommendations to strengthen this component. Conduct a review of current ITN programme/revolving fund monitoring systems, identify constraints and modify as necessary to develop a user-friendly and workable reporting/monitoring system for district health management team (DHMT) and health centre staff and community workers. Support NMCC to ensure its incorporation into the mandatory reporting systems of the CBoH.
5. To support NMCC and CBoH to develop detailed action plans for malaria prevention and control (with a focus on ITN access) for the following vulnerable groups:
 - Pregnant women
 - Refugees
 - Displaced populations
 - Orphans and vulnerable children, including child-headed households.
 - The very poor

The work was undertaken by four consultants (Jayne Webster, Mulenda Basimike, Jenny Hill and Mark Young) over a period of 101 days between July and October 2000. A list of people met by each consultant/mission is included in Annex 1.

This report covers objectives 1,2 and 4, all of which relate to the community based malaria prevention and control programme. The reports on operationalising RBM and on malaria in vulnerable groups are covered in separate reports.

3. METHODS

3.1 Rapid Review of CBMCP

The rapid review of the CBMCP was conducted by Jayne Webster from 31st July to 19th August through interviews with:

1. Staff of the National Malaria Control Centre and UNICEF
2. Luapula provincial level staff
3. The District Health Management Team (DHMT) of each of the four districts of Mansa, Mwense, Nchelenge and Samfya
4. The staff, of 14 Rural Health Centres, involved in the CBMCP (4 in Mansa, 2 in Mwense, 5 in Nchelenge and 3 in Samfya)
5. A total of 59, members of 17 Malaria Control Committees (MCCs) (4 in Mansa, 3 in Mwense, 5 in Nchelenge and 5 in Samfya)
6. Several households in two districts (Mansa and Mwense)

An interview was also held with the Society for Family Health (SFH) Project Coordinator, to determine their feelings on the progress of their community based ITN programme in

Eastern Province and their social marketing of ITNs in Kitwe on the Copperbelt. SFH is also planning to partner NMCC/UNICEF in one district (Kasama) later in 2000.

Although many changes have been made to the programme between its start in 1994 and the present day, the basic framework of the programme has remained (with the exception of the baseline malariometric and knowledge, attitudes and practice (KAP) surveys). For this reason, the tools used in the present rapid review were adapted from those used in the mid-term review of 1996⁴. These tools consist of interview guides for DHMT, regional health centre (RHC) staff and the MCCs (available on request from the Malaria Consortium).

Programme documentation was reviewed from UNICEF, NMCC, the DHMTs and the MCCs. This documentation included the mid-term review, the evaluation, action plans, proposals and reports (Annex 2).

The review was conducted together with the NMCC Programme implementor for Luapula Province and in each district the consultant was accompanied at all times by the DHMT focal person for the CBMPCP.

3.2 Review of Monitoring and Evaluation Systems

The review of monitoring and evaluation systems was conducted by Mulanda Basimike from 21st August to 11th September. Information for the review was collected through interviews with key actors in malaria project implementation at all levels (national, provincial/district and community levels). At the national level, interviews were conducted with NMCC Programme Manager who is responsible for the overall coordination of the monitoring activities and with the Health Information System Specialist and Malaria Control Officer, responsible for all ITN activities. In Nchelenge, Mansa and Samfya districts, interviews were conducted with the DHMT officers responsible for ITN/malaria control activities in the district. At UNICEF level, interviews were held with the Child Survival Project Officer in which programme the malaria control activities fell.

In order to collect information on past reviews done in the ITN control areas, a review of the available literature, including previous Malaria Consortium reports and those that have been provided by UNICEF was carried out (Annex 2). Meetings with the relevant staff from UNICEF, government and other partners involved in malaria control in Zambia were arranged.

3.3 Review of UNICEF support to malaria control in Zambia

The review of UNICEF support to malaria control in Zambia was undertaken by Jenny Hill and Jayne Webster, between 18 and 21st September. UNICEF's main contribution to malaria control in Zambia is through the community based malaria prevention and control programme at district level. The review of UNICEF support therefore focused on the findings of the rapid review of CBMPCP in the context of the new RBM strategy and within the context of other resources available for malaria control in the country. Interviews focused on NMCP, CBoH and the main partners supporting malaria (UNICEF, WHO, USAID, SFH, CMAZ)⁵ and other health sector initiatives. A wide range of documents were reviewed, including internal programme and project reports, CBoH

⁴ Hill, J. (1996) A review of the UNICEF supported community based malaria control programme in Samfya District

⁵ JICA is a main partner in Zambia but owing to time restrictions an interview was not possible.

strategy and policy papers, reports commissioned by NMCC and reports provided by other agencies; these are cited in the footnotes of the report.

4. FINDINGS

A rapid review and an evaluation of CBMPCP have previously been conducted of the pilot project in the three initial communities in Samfya. This report concentrates on the implementation of the expansion phase to the remaining communities in Samfya and to the communities of Mansa, Mwense and Nchelenge Districts. However, figures quoted in the implementation progress report are inclusive of both the pilot and expansion phases unless otherwise indicated.

4.1 Implementation Progress

4.1.1 Communities implementing the programme

In each district, pilot communities were first identified for implementation, 3 in Samfya in 1995, 1 in Mansa, 2 in Mwense and 5 in Nchelenge in 1999. In Mwense, Nchelenge and Samfya, members of all communities (18, 10 and 22, respectively) have been both trained in CBMPCP and received the logistics to implement the ITN sales arm of the programme (Table 1). Whilst 26 communities in Mansa have been trained in the CBMPCP programme, 16 communities have not yet received their logistics, such as mosquito nets, insecticide, bicycles and equipment for insecticide treatment of the nets.

Table 1: Number of communities trained and implementing the CBMPCP per district

District	Population	No. of communities in the district	No. of communities trained in CBMPCP	No. of communities who have received their logistics ⁶
Mansa	182,000	26	10 in 1999 and 16 in 2000	10
Mwense	111,377	18	2 in early 1999 and 16 in late 1999	18
Samfya	124,986	22	3 in 1995, 3 in early 1999 and 16 in late 1999	22
Nchelenge	146,795	10	5 in early 1999 and 5 in late 1999	10
Total	565,158	76	76	60

4.1.2 DHMT, RHC and malaria agents trained by the programme

In the 4 districts of Mansa, Mwense, Samfya and Nchelenge there have been a total of 96 DHMT and RHC staff trained in the CBMPCP, and 666 malaria agents (Table 2). This represents coverage with trained malaria agents of 1 per 1,144 population in Mansa, 1 per 884 in Mwense, 1 per 451 in Samfya, and 1 per 1,412 in Nchelenge. Malaria agents per household⁷ for each of the districts is 1 per 191 households in Mansa, 1 per 147 in Mwense, 1 per 75 in Samfya, and 1 per 235 in Nchelenge. Of the malaria agents trained 32% are female.

⁶ Logistics includes mosquito nets, insecticides, bicycles and other equipment with which to carry out insecticide impregnation of the mosquito nets.

⁷ Average household size is 6 persons

Table 2: Numbers of DHMT / RHC and malaria agents trained in CBMPCP for each district

District	Population	No. of DHMT / RHC staff trained	No. of malaria agents trained in CBMPCP	Total
Mansa	182,000	2 DHMT 26 RHC	159	187
Mwense	111,377	3 DHMT 18 RHC	126	145
Samfya	124,986	10 DHMT 25 RHC	277	312
Nchelenge	146,795	3 DHMT 9 RHC	104	115
Total	565,158	96	666	762

4.1.3 Mosquito nets and insecticide procured 1995 to 2000

Between 1994 and 2000, 80,200 mosquito nets have been procured for CBMPCP in Luapula Province (Table 3) by UNICEF. Whilst the majority of these nets were donated as 'seed' nets, 2,400 were procured using money from the revolving fund. 12,000 nets were also donated by JICA. FAO have procured 4,000 nets and insecticide treatment kits K-O Tabs ® for Mwense district ⁸, these have not yet been distributed. This gives a total of 96,200 nets procured by all partners. In the 5/6 years that the programme has been running, 625 litres of permethrin, 382 litres of ICON ® (lambdacyhalothrin) and 31,000 K-O Tabs have been procured.

Table 3: Logistics procured by UNICEF for the Luapula CBMPCP between 1994 and 2000 ⁹

	Mosquito nets	Insecticide
1994 - 1995	13,800 ¹⁰	625 litres permethrin
1996		
1997	3,400	
1998	14,600	192 litres ICON
1999	27,400	190 litres ICON
2000	21,000	27,000 K-O Tabs
Total	80,200	

4.1.4 Mosquito nets and insecticide distributed to the districts 1995 to 2000

Reports from the districts indicate that 54,223 mosquito nets in total, have been distributed to the districts, since the programme began in 1994 - 8,500 to Mansa, 10,250 to Mwense, 21,473 to Samfya and 14,000 to Nchelenge. It is not clear what quantity of insecticide has been received by either Mwense or Samfya DHMTs to date.

⁸ Personal communication August 2000, Mr. Kanyembo, FAO Health and Nutrition Coordinator, Luapula Province.

⁹ Does not include the contributions of mosquito nets and insecticide from FAO.

¹⁰ 14,125 mosquito nets were procured, 13,800 delivered to Samfya in August 1995 and the rest were given to TDRC Ndola.

Table 4: Mosquito nets and insecticide distributed to each district ¹¹

District	Population	Mosquito nets	Insecticides
Mansa	182,000	8,500	18 x 500ml ICON 6,900 K-O Tabs
Mwense	111,377	10,250	?
Samfya	124,986	21,473	?
Nchelenge	146,795	14,000	86 x 500ml ICON 7,784 K-O Tabs
	565,158	54,223	

A total of 96,200 nets have been procured by the programme, 54,223 of which are reported to have been distributed to the districts, leaving 41,977 nets undistributed. Four thousand of these nets were still in FAO storage (at the time of the consultancy) leaving 37,977 (39% of the total nets) unaccounted for. Due to the lack of records at central level it is not clear how many of these nets are still to be distributed to the districts, how many have already been distributed and not recorded or how many are 'losses' from the system.

4.1.5 ITN sales coverage by the CBMPCP 1994 to 2000

The flow of information is weak at all levels of the programme, such that there are no accurate figures available for the number of ITNs sold by the programme. Table 5 lists ITN sales that have been recorded and reported by the districts, plus sales information gathered through personal visits to MCCs. It should, therefore, be recognised that there may have been more nets sold than indicated in the table. Sales information was available for the three pilot communities in Samfya up until 1998, however, since this time, and since the expansion to the other 19 communities in the district, there is no reliable information available. In Mwense district, information is only available for 12 of the 18 communities, the information from Nchelenge is sporadic, whilst information from Mansa District appears to be relatively reliable.

Table 5 indicates that a total of 12,497 ITNs have been sold by the CBMPCP since 1995. However, as explained above, this is the minimum number of ITNs sold and the extent of the underestimation is not known. Assuming that 2.5 people are protected by each ITN, this gives a sales coverage of 6.75% for a population of 453,158. This sales coverage gives no indication of the population, or household, coverage with ITNs in the districts, it is purely sales coverage by the programme. If nets or ITNs were already in use in the communities then the actual coverage may be higher, conversely there may have been leakage of ITNs to other districts leading to lower coverage. The sales coverage above, gives no indication of whether target groups were reached.

¹¹ A reliable source for this information was not identified at central level, these figures were therefore gathered through reviewing district reports from all four districts. The accuracy of the figures cannot be guaranteed.

Table 5: Numbers of mosquito nets and insecticide recorded as sold and the resulting sales coverage by the programme for each district

	Population	ITNs sold	ITN sales coverage by the programme
Mansa	70,000 ¹²	1,167 ¹³	4.2%
Mwense	111,377	2,172 ¹⁴	4.9%
Samfya	124,986	7,007 ¹⁵ + 685 ¹⁶	15.4%
Nchelenge	146,795	1,466 ¹⁷	2.5%
Total	453,158	12,497	6.75

The sales coverage by district ranges from 2.5% in Nchelenge to 15.4% in Samfya. Mansa has only one community (Mabumba) that has been implementing the programme for more than one year, whilst 9 communities have been implementing since June 2000. Sixteen communities still have not received their logistics. Mabumba has achieved 10.7% (using CSO population data) sales coverage (Table 6¹⁸). In Mwense and Nchelenge, 2 and 5 communities respectively have been implementing the sales arm of the programme for more than one year, whilst the rest of the communities have only been implementing since June 2000. The experience from the pilot project in Samfya and from the pilot communities in Mansa, Mwense and Nchelenge, suggests that sales are seasonal, and follow cash availability rather than malaria transmission levels. It is therefore difficult to assess sales levels without following the sales records for a year.

Sales were very much higher in the pilot project than they were in the expanded programme, even within Samfya District. Although more than 100% sales coverage has been achieved in Mushili, 96% of this was before December 1997. As stated above, this is calculated using reported sales coverage from the DHMTs, which may be an underestimate of actual sales. In Shikamushile, Samfya District where the programme has been implemented since June 1999, a sales coverage of only 2.6% has been achieved.

¹² The population of Mansa District multiplied by 10 out of 26 communities (as only 10 communities are implementing to date)

¹³ Sales reported by Mansa DHMT from implementation to May 2000

¹⁴ Sales from June 1999 to June 2000 for 12 of the 18 communities, reported by Mwense DHMT, June 2000

¹⁵ January 1996 – November 1997 in Dembo Rath, A. and Hill, J. (1998) Evaluation of the Community-Based Malaria Control Project in Samfya District, Luapula Province, Zambia. Malaria Consortium Report.

¹⁶ Includes 118 ITNs sold by Matongo August 1999 to October 1999 and 113 by Mushili January 1998 to February 2000 reported by Samfya DHMT June 2000. Sales figures through personal visits to the MCCs include: Kasaba, 93 ITNs between June 2000 and August 2000; Shikamushile 95 ITNs between June 1999 and May 2000; Mwense, 266 ITNs between June 1999 and August 2000. Giving a total of 685 ITNs.

¹⁷ Sales from June 1999 to April 2000 reported by Nchelenge DHMT June 2000

¹⁸ These communities were selected for the table as they were ones which were visited and data collected first hand

Table 6: Numbers of mosquito nets and insecticide sold, and the resulting sales coverage by the programme for selected communities

	Population		Mosquito nets sold	Mosquito nets retreated once	Mosquito net sales coverage by the programme	
	CSO ¹⁹	Headcount ²⁰			CSO population	Headcount population
Mansa District						
Mabumba	10,155	18,700	434	0	10.7%	5.8%
Ndoba	5,160	10,409	103	-	5.0%	2.5%
Mwense District						
Lukwesa	8,898	-	350	?	9.8%	-
Mambilima	13,021	-	550	10	10.6%	-
Mupeta	2,174	-	26	-	3.0%	-
Kashiba	7,596	-	344	-	11.3%	-
Samfya						
Mushili	4,727	-	2,958 ²¹	299	156%	-
Kasanka	8,518	-	1,918 ²²	-	56%	-
Shikamushile	8,946	9,393	95	0	2.6%	2.5%
Kasaba	14,148	17,450	93	-	1.6%	1.3%
Nchelenge						
Kambuuli	16,500	-	344	0	5.2%	-
Chabilikila	-	6,000	89	-	-	3.7%
Kanyembo	-	10,724	116	-	-	2.7%

Note: Figures in bold represent the pilot communities who have been implementing the CBMPCP for more than one year. Net coverage is calculated as 1 net per 2.5 people.

4.1.6 ITN retreatments

ITN retreatments have been negligible in the expanded programme. Of the four communities visited who should have been carrying out retreatments for the last two months, only 10 retreatments have been conducted. This gave a less than 1% retreatment rate.

4.1.7 Cost recovery

The cost to UNICEF of procuring an ITN can be averaged out at K16,640 (US\$ 5) ²³, whilst the selling price may be averaged at K12,750 ²⁴. This is a 23% subsidisation rate. The cost recovery rate for an individual net should be 71% ²⁵. The cost recovery rate for nets (net costs only does not include other programme costs) in Mansa is 66% ²⁶, and for Mwense 57% ²⁷, this means that 5% of the expected cost recovery from the nets into the revolving fund has been lost in Mansa, and 14% in Mwense. Data was not available

¹⁹ Central Statistics Office 1990 census data

²⁰ As the census data is 10 years old, many communities have utilised their CHWs to perform headcounts

²¹ The majority of these sales (2,845) were pre-December 1999.

²² Sold up until November 1997, no sales reports were available after this time, sales figures were not available at Kasanka RHC when visited in August 2000

²³ Average of the cost of the three different net sizes plus freight charges, this figure is an estimate

²⁴ As sales of the double net are very low in comparison to the other sizes, the sale price of double nets have not been included in the calculation of average sale price

²⁵ $1 - \frac{\text{net revenue}}{\text{net cost}}$ net revenue = K12,750 – K1,000 commission (K500 for the Malaria Agent and K500 for the MCC), net cost = K16,640

²⁶ Money banked = K12,774,300; procurement cost of an ITN = K16,000; ITNs sold = 1,167

²⁷ Money banked = K20,522,000; procurement cost of an ITN = K16,000; ITNs sold = 2,172

to calculate cost recovery rates for Samfya and for Nchelenge. The cost recovery rate takes into account money banked and reported net sales only, and may therefore be used to give an indication of losses from the revolving fund.

4.1.8 Programme cost per net distributed

When calculating the cost per net distributed it is important to realise that the costs of the programme are for many other activities besides the sale of ITNs. As such, a share of the costs of the programme must be apportioned to the ITN activities. Given the poor records of the programme, several of the assumptions used to do this are quite arbitrary. In order to account for this several scenarios have been used and the costs calculated under each.

Table 7: UNICEF Malaria Project Expenditure from 1994 – 2000 ²⁸

	1994	1995	1996	1997	1998	1999	2000	Total
Supplies ²⁹	70,357	32,700		25,354	40,402	249,664	723,970	1,142,447
Training ³⁰ / planning		918	12,685	4,000	14,579	101,178	269,730	403,090
Technical assistance ³¹				48,554	17,869	10,913	13,471	90,807
Distribution costs						5,000		5,000
Evaluation / research			9,000		13,880		67,702	90,582
Total	70,357	33,618	21,685	77,908	86,730	366,755	1,074,87	1,731,926

Cost to UNICEF

Cost to UNICEF per net delivered to the districts is calculated using the data in Table 7. The CBMPCP is considered as having two arms: the sale of ITNs and retreatments; and the community awareness raising and care seeking for malaria. 100% of the supplies and distribution costs were attributed to the ITN sales arm, whilst 50% of the training/planning, technical assistance and evaluation/research costs were attributed to each arm of the programme. One third of the UNICEF Child Health Programme Officer's salary was attributed to the CBMPCP, then a further 50% was attributed to each arm of the programme. All costs from 1994 to 1999 were considered to be for the initial 4 districts, Samfya, Mansa, Mwense and Nchelenge. In 2000, a proportion of the costs of the programme were for the expansion to other districts in Luapula Province and to other provinces. It was not possible to obtain accurate breakdowns of costs per district for the year 2000, therefore 3 figures are quoted in tables 8 and 9: **figure A has been calculated using the most likely costs attributed to the initial 4 districts** ³²; figure B has been calculated presuming that none of the costs for the year 2000 were for the initial districts, but were for the expansion phase only; whilst figure C has been

²⁸ UNICEF Zambia accounts department data

²⁹ Bednets, insecticides, treatment equipment (basins, gloves, etc), bioassay kits, bicycles, IEC materials

³⁰ CHWs, Malaria Agents, Health Staff

³¹ consultants

³² C. Rudert handover notes – 10 districts have received nets by mid-2000, therefore the costs of supplies are multiplied by 4 out of 10.

calculated presuming that all of the costs in 2000 were for the 4 initial districts. Technical support costs for the UNICEF Project Officer for Child Health have been included at 1 full year for 1999 and 6 months only for 2000, as UNICEF now have a staffing vacancy for this position.

Table 8: Total expenditure and activity using scenarios A, B, and C.

	UNICEF (US\$)	UNICEF/JICA ³³ /FAO ³⁴	Nets distributed
A	880,058	954,867	54,223
B	563,919	638,205	54,223
C	1,475,408	1,549,693	54,223

Table 9: Cost to UNICEF, and to all donors per ITN procured and per ITN distributed

	A	B	C
Programme cost per net procured (UNICEF input only) ³⁵ (US\$)	9.19	5.89	15.40
Programme cost per net distributed (UNICEF input only) (US\$)	16.24	10.40	27.21
Programme cost per net procured (UNICEF/JICA/FAO input) (US\$)	9.97	6.66	16.18
Programme cost per net distributed (UNICEF/JICA/FAO) (US\$)	17.61	11.77	28.58

³³ JICA are estimated to have donated nets and insecticide worth US\$72,000 to Samfya District

³⁴ FAO have funded K8,080,000 of training for Mwense District (Mwense DHMT report November 1999), it has been estimated that the same amount of funding was provided to Nchelenge District. The conversion rate used is K3,200 = US\$1.

³⁵ Minus 4,000 FAO nets

4.2 Implementation Processes

4.2.1 The Preparatory Phase

4.2.1.1 Planning meeting

A participatory planning meeting was held in May 1998 to develop an Action Plan for the implementation of the CBMPCP in the districts of Mansa, Mwense, Nchelenge and Samfya. The participants consisted of representatives from each of the four districts (2 DHMT and 2 RHC staff from Mansa, Mwense and Nchelenge, and 3 RHC staff from Samfya) and two facilitators from UNICEF. Of the Mansa DHMT staff who participated in the original planning meeting, only one is still a member of the DHMT.

4.2.1.2 Training of DHMT staff, RHC staff and malaria agents

Course content and training materials

Two manuals have been developed to help in facilitating the training of DHMT staff, RHC staff and malaria agents³⁶. These are a 'Resource Handbook for Health Centre Staff and Community Health Workers', and a 'Facilitators Guide for District Health Management Teams and Health Centre Staff'. The content of the manuals is basically the same with a few extra facilitation notes in the 'Facilitators Guide'. Units covered in the manuals include: current malaria control strategy in Zambia; malaria transmission and life cycles of the mosquito and parasite; clinical features of malaria and its diagnosis; treatment of malaria; risks and management of malaria in pregnancy; malaria prevention; the use of insecticide treated nets; public education on malaria; project management; management of project supplies; and financial management. There are opportunities for this manual to be expanded with the future development of a community based IMCI module.

The manuals are well presented and contain a lot of information. However, within the content there are a few points that should be made clearer or better emphasised.

- There is an over emphasis of the killing effect of the insecticides on mosquitoes and an under emphasis on their excito-repellancy (even though both lambda-cyhalothrin and deltamethrin are less repellent than permethrin). This may have contributed significantly to the reduced confidence in the effectiveness of ICON observed in several communities.
- The manual states that the agent should treat the net with insecticide at the time of selling it, and tell the buyer when it needs retreating. However, it is not clearly stated that the buyer should observe the treatment process. This point needs to be emphasised, as it was not clear from the field visit that this process of observation of the treatment process by the client is happening consistently. There is the possibility of moving towards home treatment with K-O Tabs, so ensuring that the client observes the treatment/retreatment process now is also valuable in this respect.
- The fact that the net must be clean and dry before being treated/retreated is noted in the manual, but there is no explanation on *why* the net has to be clean – this should be included and emphasised.

³⁶ Although the Malaria Agents are presently being called CHWs, the term Malaria Agent has been maintained in this document purely for the purpose of distinguishing the two. The training up of Malaria Agents to become CHWs is fully supported.

- The chart on 'comparison of the effectiveness of different malaria prevention methods' is not supported by documented research. Unless there is specific data from Zambia to support this chart, it should be removed as it is inaccurate. The chart compares the effectiveness of different prevention methods on a scale of 1 to 10, by suggesting how a graph 'might look'. On the scale of 1 to 10, ITNs are placed at 10, untreated nets at 7, preventive chloroquine (CQ) at 6, reduction of breeding sites at 3, residual spraying at 1 and slashing grass at 0. A recent review on effectiveness trials of insecticides for spraying in comparison with use of bednets, for malaria control in Tanzania, South Africa, India and Pakistan ³⁷, did not find evidence to support such a 9-scale point difference in the effectiveness of ITNs and residual spraying. In Tanzania, ITNs and spraying were found to have equal effects upon both malaria and mosquitoes.
- In the Project Management section of the training manuals, the role of the DHMT is precisely 8 words long. Much more emphasis is needed on the management role of the DHMT.

As none of the training courses were observed by the consultant, no comments can be made on whether the points mentioned above were covered in more depth during the training than in the training manual.

Course duration

Without exception, everyone, including DHMT staff, RHC staff and malaria agents were very happy with the training they were given on the CBMPCP. The common complaint was that it was not long enough. At present DHMT/RHC staff training is 5 days and malaria agents 7 days. The part particularly identified as needing more time was the financial management section. Several of the agents remarked that it was a long time since they had attended school, so they needed more time to adjust to learning again. Judging by the problems encountered in obtaining accurately completed monthly statements, this comment is very valid. However, this is complicated by poor supervision found at all levels of the programme.

The RHC staff were asked what would be most useful to them in terms of capacity building. There were a variety of answers to this question, including more medical training. Only one of the RHC staff suggested that he would like to have training in supervisory skills so that he would be better able to solve problems encountered in the CBMPCP.

4.2.1.3 Community sensitisation

The DHMT in Mwenze felt that the community mobilisation component of the programme was inadequate. They expressed the opinion that more of the different cadres of the community should be targeted for sensitisation.

There do not appear to be any clear guidelines on the community sensitisation process, what it entails, or whom it should involve. The most common accounts of the community sensitisation process were that it involved DHMT members talking about the programme with prominent members of the communities. These included headmen, politicians and some NHC members. Public meetings with a wider section of the communities were not

³⁷ Curtis, C.F., Mnzava, A.E.P., and Rowland, M. (1999) Malaria control: bednets or spraying? *Transactions of the Royal Society of Tropical Medicine and Hygiene* 93, 460

indicated. In the communities of Mwenje and Mano, Samfya District, difficulties had been encountered due to local politicians informing wide sections of the community that the nets would be free, before the implementation of the programme began. This led to a distrust of the malaria agents by the community, when they were informed of the prices.

4.2.1.4 Selection of Malaria Agents

There are concise guidelines to aid in the selection of malaria agents, which include points such as literacy and numeracy, willingness to help the community, together with the recommendation that any trained community health workers (CHWs) should be included. The rural health centre staff are asked to guide the community in the selection of the agents. The extent of the input from RHC staff varies considerably from community to community. Recently the communities have been instructed to select one agent per 1,000 population. This follows the same selection criteria as that of CHWs. This has been introduced with the aim that in the forthcoming round of training of CHWs by the Zambia Integrated Health Programme (ZIHP), the malaria agents will be prioritised in the selection process. This idea in principle is to be supported as it is likely to increase the frequency and quality of contact between the malaria agents and the community. However, in Mwenje District, the training of CHWs has already begun and amongst the 22 CHWs who trained none were malaria agents.

In all communities interviewed the malaria agents were said to have been 'chosen by the community', however, it seems that this phrase is used loosely and can mean different things to different people. Some RHC staff commented that the original nominations were made by headmen in some communities, and the voting was then conducted from amongst these nominees. This means that the choice was not really made by the community but by the prominent and powerful amongst the community.

In Kasanka, Samfya District, four new malaria agents had been selected and trained by the Malaria Control Committee, the standard of their training has not been assessed and at this point is unknown, but they are selling ITNs.

4.2.1.5 Formation of Malaria Control Committees (MCCs)

The Malaria Control Committee consists of a chairperson, treasurer, secretary and storekeeper. The MCC is a sub-committee of the NHC and the members of the NHC may also be position holders in the MCC. The MCCs were, in the majority of cases, elected by the malaria agents and the neighbourhood health committees (NHCs), or sometimes solely by the NHCs. In some cases this election took place prior to the training of the malaria agents. Some communities reported that after the training course their designated treasurers had asked to be replaced, as they felt that the financial accounting would be too difficult for them. It is expected that all members of the MCC will be trained malaria agents, however, in several communities in Mansa, it was found that the chairperson of the MCC had not been trained in CBMPCP. This had caused problems in that the chairperson was not selling ITNs, did not have a bicycle and was not party to any commission that the other members and agents were getting. In Mabumba community, Mansa District, twenty malaria agents were trained, but they were given just 11 bicycles and only 10 of the agents were selling ITNs. Their original arrangement was that the 10 members of the MCC were not allowed to sell ITNs. The guidelines as to who should constitute the MCC have been confused in Mansa.

4.2.1.6 The relationship between the NHCs and MCCs.

In the majority of communities there was a good relationship between the NHC and the MCC, with the MCC being a sub-committee of the NHC. Several malaria agents were members of the NHC, and some held committee positions in both. However, in some communities the relationship was not good, such as in Kashiba, Mwense District. There were longstanding tensions between the NHC and the RHC staff, and as the MCC had a strong relationship with their supervisor, this resulted in the relationship between the NHC and the MCC also being poor.

4.2.2 Information, Education, Communication and Case Management

4.2.2.1 Awareness raising / public education

The most common way that awareness raising was performed was during visits to households in the hope of selling ITNs. Several communities reported that they gave health education at the RHC, particularly during maternal and child health (MCH) clinics and under 5 clinics. One community, Mambilima in Mwense District, had performed several dramas during religious celebrations on Sundays. In the majority of communities, the information, education and communication (IEC) component is not being given enough input and needs expanding. DHMT Mwense feel that there is much more energy being input into the sale of nets than into the public education arm of the programme.

Generic IEC materials have been developed by NMCC and its partners, however, with the exception of a few posters, these have not yet reached community level. In the communities included in the pilot project, the results of the KAP surveys were used to develop IEC materials locally. KAP surveys are no longer conducted in each community prior to implementation of the programme. The malaria agents all felt that they could be more effective in awareness raising with the aid of IEC materials.

4.2.2.2 Community coverage by the malaria agents

The RHC staff were asked to draw a simple map of their catchment area and to indicate the homes of the malaria agents within that area, with the aim of looking at the relative coverage of different areas. The most immediately evident problem in all districts, was in those that were selected as pilot communities. Initially in these areas only an area within close proximity of the RHC was targeted, and the programme did not cover the whole of the RHC catchment community. When the programme expanded, the malaria agents who had been selected from the area in close proximity to the RHC were expected to cover larger areas; extra malaria agents were not trained to cover the new areas. Due to the distances involved being great, these areas are not visited very often, if at all. In Mambilima community, Mwense District, there are 9 zones and out of a total of 17 agents, 14 of these are from just two zones. Kambuali in Nchelenge District was also a pilot community and once again the 10 malaria agents were chosen from 3 zones close to the RHC.

Within several communities, areas were identified which were not covered by agents. In one community, Ndoba, Mansa District, this was a result of a community conflict (between the RHC and one of the village headmen), however, in others it was purely because of poor selection of agents. In Kabunda Zone, Ndoba there are 7 villages and no Malaria Agent.

In Mupeta community, Mwense District (plateau) the area surrounding Wanyange health post, with a population of approximately 800 people was identified as an area that was

not being adequately covered. The majority of communities were able to specify areas that were not covered by malaria agents.

4.2.2.3 Drop-out rates

In Mabumba, Mansa, five out of the twenty malaria agents originally trained are no longer active. Of these five, only three had previously been selling ITNs, the other 3 had been members of the MCC but did not sell. The 'drop-out' rates are generally low, however, in several communities there are malaria agents who, although they have not officially 'dropped-out', are not active. The major reason given for malaria agents being inactive was that the commission was too low. This is especially problematic when the agent is a member of the MCC as in Kafutuma with the chairman, and in Kasanka, where the treasurer has been out of the village for several months.

4.2.2.4 Case management

IMCI training was very well received amongst the clinical officers at RHCs, they felt that their differential diagnosis skills had been enhanced. One problem mentioned at several clinics, was that there is a difference in the treatment guidelines that they have been using, and those of IMCI, for the age group 2 to 12 months of age. One of the Clinical Officers felt that the IMCI guidelines were overdosing in this age group.

When asked if they received referrals, of patients with suspected malaria, from the malaria agents, the responses were varied. Some said that yes they did, but mostly in very low numbers, whilst the response from others was that they received referrals from CHWs but not from malaria agents. The malaria agents who were referring malaria patients to the RHC were, in the majority of cases, those who had been previously trained as CHWs. The malaria agent's response to this question was that as they were not supplied with a CHW kit, or even with chloroquine alone, and people did not come to them very often. Their knowledge and advice on malaria treatment was not well received when they did not have the ability to treat. They all felt that they would be much more effective and would receive many more patients if it were known that they could also treat. This is one of the major factors that precipitated the decision that malaria agents should be selected for training as CHWs. This would also avoid having too many different cadres of health workers at the community level.

4.2.2.5 Motivation

After training, some communities had to wait for 6 months and more before they received their logistics to begin implementing the programme. This was reported by many to have decreased the initial high levels of motivation achieved during the training.

It was suggested by Mwense DHMT that community exchange visits would be a way of both increasing motivation and of improving performance by introducing an element of competition between the communities. The malaria agents in several communities expressed their disappointment that they had not been asked to help in the National Immunisation Days (NIDs) for polio. They would like to be included in any future community health activities.

Feedback on how their programme is performing should also be used as a motivation tool, especially if feedback is used to introduce a competitive element, for example in the form of a newsletter. In addition to feedback to individual communities on their performance, a general newsletter giving wider information would also serve to maintain interest in the programme. Lusaka DHMT have recently produced a single sheet

newsletter for partners in their health programmes, this should be used as an example upon which to build a similar news sheet for the CBMPCP.

4.2.3 Insecticide Treated Nets

4.2.3.1 Logistics

The nets in the initial pilot project in Samfya District were white, cotton and rectangular. The nets currently procured are green, polyester and rectangular. Nets are available in 3 sizes: double (100x150x180), family (160x170x180) and extra family (190x170x180). Although KAP surveys included questions on preferred size of net, there was a problem with the interpretation of what is double, family and extra-family. The imported double size net actually fits a Zambian single bed. This caused problems in some communities, as clients were returning nets that they found were too small for their beds. In all communities, with the exception of one Mutiti in Mansa, family and extra-family sized nets were selling much better than the double size. There have been problems with some of the batches of nets arriving from Sunflag with no size labels on the outside, and some have had the wrong size label on the inner packaging.

Comments were made in several communities, particularly in Mansa District, that people preferred conical nets, as they are easier to hang.

Permethrin was the insecticide originally used in the pilot communities in Samfya. In order to provide a more mobile retreatment service, this was changed to ICON (lambdacyhalothrin), which is available in 500ml autodose bottles and is also more active at lower concentrations. There were complaints from some of the communities that there were no expiry dates on the bottles of ICON. The perceived ineffectiveness of the ICON by both the malaria agents and their clients are discussed in detail below (see section 5.2.3.7). The programme has recently changed to K-O Tabs (deltamethrin), these have been well received by the agents. The positive response to K-O Tabs has been due to the ease of use, but also due to the perceived greater effectiveness of the K-O Tabs in comparison with ICON. The communities who are currently being supplied with ICON, without exception, expressed the desire to be supplied with K-O Tabs.

Those communities using K-O Tabs had no complaints on its effectiveness. One cause for concern however, is that there are no expiry dates printed on the individually packaged tablets, nor on the packaging received at DHMT.

4.2.3.2 Procurement of logistics

UNICEF is responsible for the procurement of all logistics for the programme, these logistics include mosquito nets, insecticide, bicycles, basins, jugs, gloves, stationery for MCCs and CHWs, calculators and cash boxes. As part of its commitment to national scaling up of ITN programmes, UNICEF established the Pretoria Procurement Centre in June 1999. This centre, in South Africa, is part of the UNICEF Supply Division, which is based in Copenhagen. The centre's mandate is to procure good quality mosquito nets and insecticides at the best prices possible, within the shortest possible time, through bulk ordering and centralised procurement. As with all other UNICEF procured commodities, the nets and insecticide are imported duty free.

There have been delays in procurement and distribution of logistics to the districts, in some communities the period of time between their training and receiving of logistics has been as long as 6 months.

4.2.3.3 Storage of logistics

The DHMTs in Mansa, Nchelenge, and Samfya were storing the logistics for the communities and distributing nets in varying amounts. In Mwense, logistics are distributed directly to the communities upon receipt by the DHMT. The DHMT focal person commented that 'the logistics belong to the community, so they should manage them'.

Many of the RHCs have problems in storage of the nets, in one community, in Ndoba, Mansa District 'several' nets were reportedly destroyed by rats. In Kafutuma, where the MCC storekeeper was taken to jail for stealing nets, the RHC has insufficient storage space, therefore the nets are kept in the village by the storekeeper. Storage of large numbers of nets in the villages should be discouraged.

4.2.3.4 Selling of ITNs

Net sales in general have been very low (Table 6), the malaria agents feel that this is an affordability problem. Although questions directed at willingness to pay were included in the KAP surveys in the original communities in Samfya District and in the pilot communities in Mansa, Mwense and Nchelenge Districts, no affordability studies have been carried out. There was one question in the knowledge, attitudes and practice (KAP) study on household income, but this was not a well designed question. It was confusing in that it asked two questions in one, and was not clear on how the questions should be answered. The incidence of extreme poverty in Luapula Province ³⁸ is 69.2% ³⁹, whilst the incidence of the non-poor is 19.1% ⁴⁰. This places the cost of an ITN at around one third of the average monthly expenditure of nearly 70% of the population of Luapula Province.

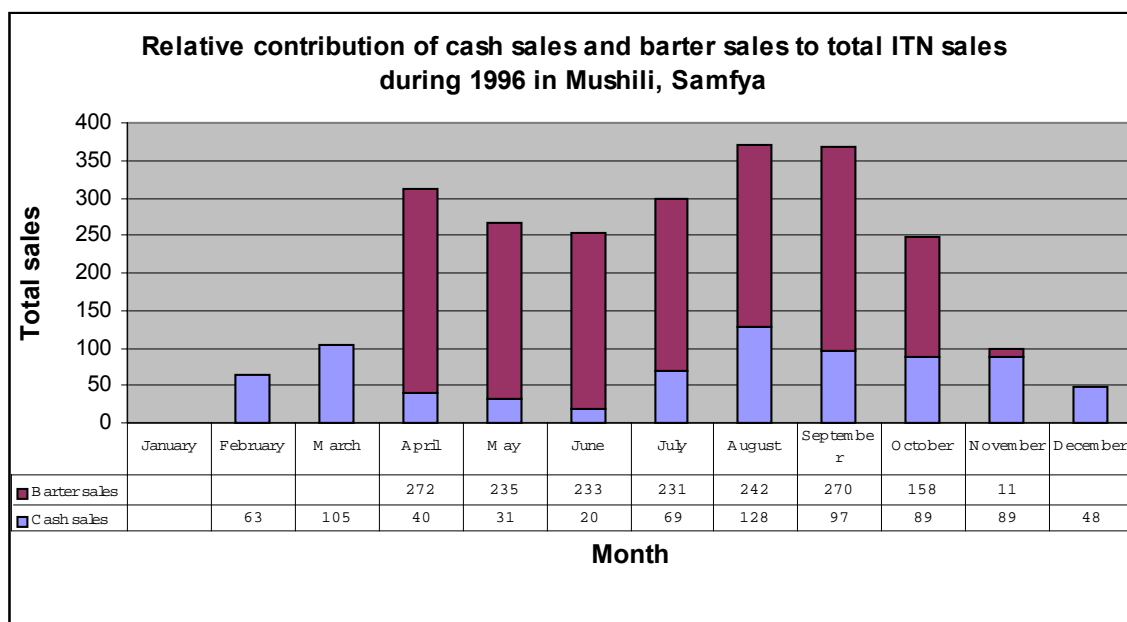
Net sales in the pilot communities in Samfya were much higher, but at this time sales in kind were allowed. Chart 1 below shows that the relative contribution of barter was much more significant, than cash to overall sales of ITNs, in the community of Mushili in 1996. The problem encountered was the lack of markets for the produce received in barter, and the resulting deterioration of the foodstuffs. For this reason the communities decided to stop taking payments in kind.

³⁸ Living Conditions in Zambia 1998. Preliminary Report. Central Statistics Office, Lusaka, Zambia.

³⁹ Household with average monthly adult expenditure less than K32,861 (K3,200 = US\$ 1, August 2000)

⁴⁰ Household with average monthly adult expenditure greater than or equal to K47,187.

Chart 1: Relative contribution of cash sales and barter sales to total ITN sales during 1996 in Mushili



The seasonality of the nets exchanged for produce using the barter system, closely follows the seasonality of high agricultural produce. It is possible that excess produce was exchanged for nets, just because it was excess and there was no available market to exchange it for cash. Although this is possible, we do not know how probable it is. If this happened then we could expect high level leakage of the nets on to the markets.

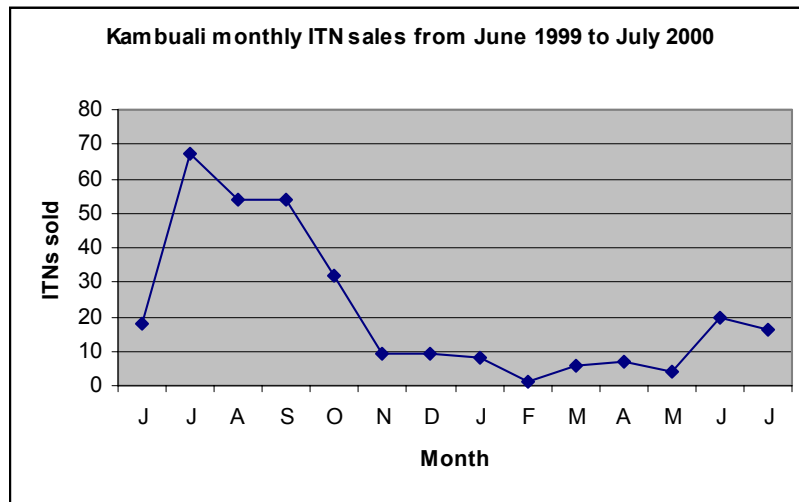
Since a high proportion of the population of Luapula Province are subsistence farmers, the levels of sales achieved with the barter system cannot be expected to be maintained in the absence of such a system.

The instalment system is being utilised in many communities, but not all. Here clients pay for their net in instalments and a payment record is kept by the malaria agent. The mosquito net is not given to the client until the last payment is made. This seems to be working quite well in some communities, however, there are complaints that sometimes the client may be short of money and will ask the malaria agent for his money back. This is a problem for the agents, especially if they have already banked the money.

Although the giving of ITNs on credit is strongly discouraged during training and the reasons for this are emphasised. Some communities, particularly in Samfya District, have given out large numbers of ITNs for which they have not yet recovered the money. The MCC from these communities say that they are trying very hard to recover the money and are sure that they will be able to do so. The Samfya DHMT are refusing to let the agents in these communities have more nets and insecticide until they recover the money from the nets they have already received. The Samfya DHMT commented that most of the debt actually belongs to members of the MCC who have used the money they collected from sales, rather than banking it. The DHMT decided that they should investigate who amongst the malaria agents had debts to repay, and let the others have nets and insecticide that they could sell to the community.

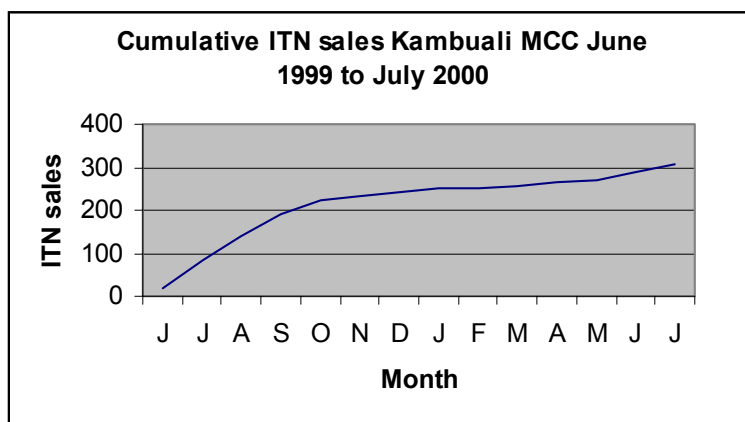
There are 'border wars' between the malaria agents in Ndoba, Mansa District and the neighbouring communities in Samfya. The Ndoba agents report that the Samfya agents have been selling ITNs to their (Ndoba) clients. The health services in this area, although officially part of Mansa, serve many residents of Samfya District, as the closest Samfya health facility is much further away. The situation is complicated by the fact that the Mansa agents are selling ITNs at the recommended prices of K11,000 for a double size net, K12,000 for a family size net and K13,500 for an extra-family sized net, however, they do not allow purchase in instalments. The Samfya agents are selling the ITNs, all sizes at K14,500, but allow instalments.

Chart two: Kambuali monthly ITN sales from June 1999 to July 2000



Although the agents in Kambuali appeared to be motivated and thinking around their work with innovative ideas, their ITN sales figures are low, particularly for the year 2000. The malaria agents in Kambuali felt that the prices of the nets were affordable, they had no complaints from the community about the prices. Sales patterns, again, follow seasonality of cash availability, rather than seasonality of transmission or mosquito density. In Nchelenge, there is a fishing ban from December to March, therefore between these months, the fishermen have no income. This is also the peak transmission season. Chart 3 shows how the rate of sales has decreased over time.

Chart 3: Cumulative ITN sales Kambuali MCC June 1999 to July 2000



4.2.3.5 Pricing of the ITNs

In all communities visited in Mansa, Mwense and Nchelenge the standard selling prices of the ITNs K11,000, K12,000 and K13,500, as stated during the training course, were being used. In Samfya district however, there was a lot of confusion and lack of uniformity surrounding the selling prices. Mwengwe, Mano and Kasanka had only been receiving double nets and extra family nets which they have been selling at K11,500 and K14,500, respectively. Shikamushile were selling double, family and extra family nets at K11,500, K13,500 and K14,500, respectively, until they were visited by their DHMT supervisor who instructed them to sell all ITNs at K14,500. Kasaba Mission Hospital were also instructed to charge a uniform K14,500 for all ITNs. The communities in both Shikamushile and Kasaba have been complaining that they do not want to pay the same price for a small net as they do for a large one.

The communities visited in Samfya were advised of the correct prices of the ITNs. After discussions between all present, it was decided that the people who had paid the inflated price of K14,500 for their ITNs would be compensated by having their first retreatment free.

4.2.3.6 Equity

Every community visited was asked whether they had any people in their community who were extremely poor and would never be able to afford to buy an ITN, even with the instalment system in place. There were very few MCCs who said that they did not have such people within their community. They were then asked how they thought we could possibly help these people to have ITNs. Answers included "let them buy in kind", and "give them free". When the problems encountered in the Samfya pilot project were recounted, most communities agreed that it would be a problem to find markets for the produce. Others thought that it could work if just one or two products (maize, and groundnuts) were accepted at standardised prices, and that these couldn't fail to be marketed. In Mabumba, the malaria agents were actually collecting goods from the community, taking them to the market to sell and then giving the client a net. In Kambuali, Nchelenge, the MCC reported that they sometimes buy things from clients for their personal use, for the price of a net.

The community were questioned as to how we could target the very poor within the community, the options they suggested were:

1. They could just identify the poor as they know their community
2. They could work with either the NHC or the social welfare to identify the poor
3. The social welfare could give less clothes to the poor and replace with free ITNs

They were then asked whether the rest of the community would be angry that they did not get free ITNs the majority response was that if the poor were identified by the community there would be no problem. They were then asked whether they thought that if the very poor were given free ITNs, they would sell it to buy other necessities, such as salt. This was not thought to be likely as mosquito biting is such a nuisance and malaria is such a problem that they couldn't possibly sell on.

4.2.3.7 Retreatment

The pilot communities in Mansa, Mwense and Nchelenge began selling ITNs in June 1998, they were trained to retreat nets after 12 months, or after the net had been washed 3 times. They have monthly sales sheets in which they write the name of everyone they sell a net to in that month. The idea being that one year later, if the client

does not come to them first, then the agent should visit that person and advise that they have their net retreated. These retreatments should have begun in June 2000, however, of the pilot communities visited, only one agent in one community had performed any retreatments (10 retreatments in Mambilima, Mwense District). The only community using ICON who did not complain that it was ineffective was Mwenge in Samfya District. There are many possible reasons for this near absence of retreatment, however, the reason given by every agent interviewed was that the ICON was not working. Several communities had even stopped selling nets because they did not believe that the ICON was effective anymore. The perceived ineffectiveness of the ICON by the malaria agents and their communities had been a problem for several months in some communities of all four districts, and specified as such in a Nchelenge DHMT report to UNICEF in January 2000.

We do not know whether the ICON was actually effective or not, there are several possibilities, which include:

- The ICON was still effective but the overemphasis on the killing effect caused the perceived ineffectiveness by the malaria agents, as they expected to see piles of dead mosquitoes around the net in the mornings
- The malaria agents had heard of the new tablets (K-O Tab) in other communities and wanted to change to this, so had decided the ICON was not effective
- The ICON had reduced effectiveness towards the more abundant nuisance mosquitoes, but was still effective against *Anopheles* mosquitoes
- The particular batch of ICON (which was only 2 months from its expiry date) was no longer effective against nuisance mosquitoes or *Anopheles*
- The period of effectiveness of the ICON is less under the conditions in the districts than the recommended 12 months, against nuisance mosquitoes, or *Anopheles*, or both
- There is resistance to lambda-cyhalothrin in the nuisance mosquitoes, and *Anopheles* are still sensitive
- There is resistance to lambda-cyhalothrin by both nuisance mosquitoes and *Anopheles*.
- Underdosing on the nets, due to incorrect dilution of the ICON

The reason that we are faced with so many possibilities is that there has been no entomological monitoring of this programme in the 6 years it has been running. The first review of the programme in September 1996⁴¹, recommended that both bioassay and insecticide resistance kits be purchased from WHO. Bioassay kits were purchased, but they were never used. Although the effective life of the ICON is accepted as 12 months, there has been no operational research to support this in any of the districts. *Anopheles gambiae* s.s resistance to pyrethroids has been reported from Cote d'Ivoire⁴² and there are some preliminary indications of *Anopheles funestus* resistance to pyrethroids in South Africa. Although there is further evidence that pyrethroid insecticides are still effective on nets at the resistance levels so far encountered, it is important that sensitivity is monitored.

⁴¹ Hill, J. (1996) A review of the UNICEF supported community based malaria control programme in Samfya District

⁴² Chandre, F., Darriet, F., Manguin, S., Brengues, C., Carnevale, P., Guillet, P. (1999) Pyrethroid cross-resistance spectrum among populations of *Anopheles gambiae* s.s. from Cote d'Ivoire. *Journal of the American Mosquito Control Association* 15 (1): 53-9.

Whatever was the reason for the perceived ineffectiveness of the ICON, the question on why no action was taken must be asked. Supervision, monitoring and lines of communication are discussed below.

A commission of K500 for every four ITNs retreated has recently been recommended by NMCC, however, the malaria agents were not aware of this. It is not clear how much of the lack of retreatments can be attributed to agents lack of motivation because of no commission.

4.2.3.8 Pricing of retreatment

In Kambuali, no retreatments have taken place so far, there had been complaints about the effectiveness of ICON, however, the agents have had K-O Tabs since April. People have since then been complaining about the K2,500 cost of retreatment when the ICON was only K1,500. Although the perceived ineffectiveness of ICON by both the malaria agents and the communities has undoubtedly been a big barrier to retreatment, it is unclear how much the cost of retreatment has also contributed to this. Achieving high retreatment rates is widely recognised as one of the most challenging parts of ITN programmes. Price should present as little a barrier as is possible.

4.2.3.9 Treatment of non-programme nets

Many of the malaria agents had been asked to treat untreated nets purchased in the market (there are no treated nets or retreatment kits available in the market). The agents have been refusing to treat these nets. The reason they are giving is that they only have the same number of K-O Tabs as nets, so they cannot provide this service. Mansa DHMT complained that they only received the same number of K-O Tabs as nets, and they felt that their agents should be treating the nets from the market.

4.2.3.10 Payments / Incentives

The biggest problem reported by all malaria agents was the cost of bicycle spare parts. This problem is being dealt with differently in the communities. In some communities, the malaria agents repair their bicycles from their personal sales commission, whilst in others the MCC commission is used. In both cases, there is reportedly insufficient money to cover the required repairs. This was the main reason given for complaints that the K500 commission from the sale of a net was not enough. On average the amount suggested by the MCCs for the commission to agents was K1,000, and the same for the MCC.

4.2.3.11 Programme revenue

Although the community are the main implementers of the CBMPCP (represented by the MCC and malaria agents), their sense of real ownership must be questioned when they are not able to have a hold on the money once they sell the nets. The MCC open bank accounts and place income from sales into them. In both Mwense and Nchelenge, the MCC have been asked to pass through the DHMT when taking money to be banked, where ledger cards are kept of money banked - thus enabling the DHMT to keep records of money banked. When the money has been banked, it will be transferred at regular intervals to one single dollar account in Lusaka, the signatories of which are the DHMTs, NMCC and UNICEF. This money is not accessible by the communities, though it is to be used for buying nets and insecticide as requested by the communities. This money has only actually been used once, for resupply of nets, and was basically a test-run to try out the system. Nets and insecticide were procured for communities in Samfya. Concerns

amongst the community were shown by one member of the MCC in Kasanka, Samfya who asked “What will happen to our money when UNICEF pull out?”

As there are charges of K40,000 per transfer to the dollar account. Several communities are now using the same local accounts and make transfers together to cut transfer costs.

Nchelenge District have not yet deposited any money into the dollar account. They have made several requests to their bank in Nchelenge, but have still not managed to get the money transferred to the dollar account. There is therefore, a risk of loss of revenue from the revolving fund if the Kwacha depreciates against the dollar.

4.2.4 Supervision

Supervision of the CBMPCP program is supposed to be done at three different levels namely at community, district and national levels. Supervision was found to be poor at all levels.

4.2.4.1 Community level

Supervision of malaria control activities at community level is the responsibility of a designated RHC staff⁴³, who have to ensure that members of the Neighbourhood Health Committee (NHC) are working together with MCC members. In all communities visited during the review the vast majority of supervision that was taking place involved the community going to the RHC. In some communities, no supervisory visits to the community from either the DHMT or RHC staff had been conducted since CBMPCP activities started (i.e. for more than six months). Thus, nothing was known about their performance.

The NHC committees have a broad responsibility to oversee all health-related activities at community level while the MCC focuses on malaria alone, and is considered as sub-committee of the NHC. Members of both committees must ensure that ITN activities together with other malaria control activities are running smoothly on day to day basis. Meetings to review malaria control activities in every community are called for and chaired by the MCC chairman; the MCC secretary prepares the agenda of the meeting. NHC members are invited to attend these meetings. It is noted that members of both committees should usually meet once a week but, in most cases, they have been meeting once in 2 weeks and others once in a month.

The RHC supervisor for CBMPCP is supposed to attend these meetings but they are often absent because of the busy workload at the health centre. Most RHCs are understaffed⁴⁴ and therefore the RHC supervisor tends to attend only those meetings

⁴³ The RHC staff has several important functions including ITN promotion; ensuring that NHC and MCC members are promoting other malaria control strategies in the communities that NHC and MCC members are promoting other malaria control strategies in the communities and that community agents are filling the checklist documents correctly. They also have major responsibility to audit the accounts and to check the physical balance of nets and insecticide in stores.

⁴⁴ There is often only one qualified person at an RHC, who has to provide a service at this facility and also conduct outreach services

where specific issues regarding the management of the MCC are discussed (e.g. in case of conflicts between community agents, requests for net and insecticide supply and loss of money and nets). A further problem identified was transport; the RHC supervisors felt that they require motorcycles to be able to supervise out in the community.

Due to the constraints experienced by RHC supervisors, they do not have a strong input in the monthly reports/statements and in the checklist documents. Their role has been to receive the reports and submit them to the DHMT without knowledge of their contents. This has been the basis of the inconsistent reports from communities, in terms of content and accuracy⁴⁵.

In a few communities where the RHC supervisor was working closely with the MCC, there was evidence of empowerment of the community. Two communities in particular, Mambilima in Mwense and Kambuali in Nchelenge were working with their supervisors and showing real evidence of thinking around the messages they were giving to the community. They were coming up with innovative ideas to improve what they saw as problems with the programme. There were others, but these were the communities which shone. In Kambuali, the motivating relationship was between the RHC and the MCC, in Mambilima, it was between the RHC and the DHMT.

Problems have been encountered through personalities within communities. St Paul's Mission Hospital, Nchelenge, has an enrolled nurse as the CBMPCP supervisor. It is difficult to imagine how a nurse who often works night shifts and is based in a busy urban hospital can manage to supervise a community-based programme. This nurse is a very timid young girl who is unable to ride a bicycle, so supervision in the community is not possible. The problem is compounded by a very difficult and dominating personality, in the chairman of the MCC. This appears to be an impossible match of supervisor and agent. The feasibility of continuing the programme at St. Paul's Mission Hospital is discussed further below.

A final but no less important issue is the quality of training and/or trainees. In most communities, information from the CBMPCP supervisory checklist, the health centre summary of malaria cases and net usage, and the monthly statement tools was not available. Some tools did not seem to be well understood by the MCC executive members (chairman, secretary, storekeeper and treasurer), hence failure to fill them.

⁴⁵ Every month end the MCC chairman together with the treasurer and the storekeeper are supposed to meet to prepare the monthly statement. The monthly statement together with the checklist documents is sent to the RHC supervisor for approval before sending on to the DHMT supervisor, who in turn submits the same to UNICEF and/or to NMCC. The monthly statement includes income, expenditure, bank statement, the net/insecticide sales, and the net/insecticide in stock. A copy of the monthly report (or statement) together with copies of checklist documents should be kept at the DHMT and at RHC/MCC offices. Unfortunately, none of the documents found at DHMT, RHC or at MCC levels showed the performance of the committees in CBMPCP activities.

4.2.4.2 District level

The DHMT⁴⁶ are recommended to visit the RHCs at least once per month for supervision of the CBMPCP; a supervisory checklist has been constructed for these visits. As mentioned above, when the relationship between the RHC staff and the DHMT was working well, there were innovative ideas. However, this was in the minority of cases. The supervision by DHMT was inadequate in every district; the role of the DHMT has mostly been limited to the distribution of the project supplies to its RHCs. The reason given in Mansa, Mwense and Nchelenge was transport. This is a very real problem, none of these three districts have adequate transport, and when the transport is available, fuel often is not. However, Samfya DHMT have been given 2 vehicles and several motorcycles to help specifically in the supervision of this programme. The complaint from Samfya is lack of funds for fuel.

As of the end of August 2000, 6 communities in Mwense District, who were given their supplies of nets and insecticides in February 2000, had not been visited once since receiving them. Neither had they made any deposits in the bank, or even, in fact, opened a bank account. This means that no one has any idea what has happened to the supplies that were delivered to those communities, these were a total of 2,550 nets distributed to these 6 communities.

As at the RHC level, the DHMT supervisors have been overwhelmed by their day to day administrative responsibilities. There have been irregular and/or rare visits in most cases by DHMT supervisors to monitor RHC/MCC activities. Table 10 below shows that 3 out of 4 districts have appointed fairly senior staff to supervise CBMPCP.

Table 10: Number and position of CBMPCP supervisors at district level

District	Number of supervisors	Position held by the CBMPCP supervisor at DHMT level
1. Samfya	2	- District Health Information Officer - Clinical officer
2. Nchelenge	1	- Manager for administration
3. Mansa	1	- Manager for Planning
4. Mwense	1	- Senior Environmental Health Technician

Lack of visits by the DHMT supervisors to RHC and the RHC supervisors to MCC has weakened not only the reporting system of the CBMPCP activities but also the programme's progress. Some DHMT supervisors have also complained they do not have access to the local bank account statements at RHC/MCC facilities, as the treasurers are not willing to show them.

A frequent complaint from the RHCs was that they get no feedback from the reports they send to DHMT, or from the supervisory visits; this was specified in Mabumba, Mansa.

⁴⁶ The District Health Management Team (DHMT) has in its establishment a District Director of Health (DDH), a Manager for Planning, a Manager for Finance, a District Environmental Health Technician and a District Health Information Officer. Generally, 2-6 DHMT staff are trained in CBMPCP activities and among them one is appointed (by the District Director of Health) to supervise these activities in the district. In some districts, the DDH has appointed two CBMPCP supervisors.

4.2.3.3 National level

The Samfya pilot project organogram developed in 1995⁴⁷, plots the management structures at community level, through to district level. The 1998 – 1999 Action Plan⁴⁸ for the Community-Based Malaria Prevention and Control Project in Mansa, Mwense, Nchelenge and Samfya Districts gave clear roles and responsibilities for DHMT, RHC staff, NHC, CHWs, TBAs, malaria agents and the community. However, the central level roles and responsibilities have not been defined in either of these documents.

It is however expected that the DHMT sends all monthly reports (checklist documents and monthly statements) to the National Malaria Control Centre (NMCC) to feed into its health management information system, though some districts send their monthly reports to UNICEF who in turn sends them to NMCC. Once all reports and checklist forms are received at the NMCC, a number of issues are to be analysed such as monthly net sales, money received and banked (auditing), net usage per district and the impact of ITNs on malaria. After analysis of the reports, the information is expected to be fed back to DHMTs and, in turn, to RHCs for execution and follow up in each community.

The CBMPCP operates within the structure of the Health Reforms and calls for a decentralised information system so that the information can be used locally and decisions made promptly. As such, central level has to find the best way it can provide support to the DHMTs whilst leaving ownership with them. The main concept of the new health strategy is the decentralisation of health service management to the district level, with the central and provincial levels providing technical advice together with co-ordination and policy development. This support should be both pro-active and reactive.

The pilot project in Samfya began before implementation of the health reforms in Zambia, but was designed in anticipation of the structures of the proposed reforms. The DHMT Mwense commented that the NHCs were formed at the time that the CBMPCP in Mwense was introduced in two pilot communities. It was felt that the partnership between the community and the health system was aided by the CBMPCP. Many of the problems in the CBMPCP as outlined in the sections above, are ones that are inherent in the structure of the health reforms. Efforts to solve them will therefore have a wider impact as a pathfinder for other community-based programmes (see recommendations in section 5).

4.2.5 Monitoring

As with the supervision there is a lack of comprehensive monitoring at all levels of the programme. The implementation progress of the CBMPCP has therefore been very difficult to assess and the data used in this report is very piece-meal because there is no consolidated data available at central level. Most of the data has been compiled at district and community levels.

⁴⁷ Chimumbwa, J.M. (1995) Administrative and financial guidelines for the Samfya community-based malaria prevention and control project. Guidelines for District, Health facility and Community-based project managers.

⁴⁸ Community-Based Malaria Prevention and Control Project 1998-1999 Action Plan covering Mansa, Mwense, Nchelenge and Samfya Districts. Based on a workshop held at Spark Guest House, Mansa, Zambia. May 26 – 28, 1998. Facilitated by: John Chimumbwa and Christiana Rudert with support from UNICEF

At the start of the CBMPCP programme, eight forms (for use at MCC and RHC levels) were developed as monitoring and evaluation tools. These were the stock ledger, the re-treatment list, the installment list, the petty cash record, the commission record, the monthly statement, the CBMPCP supervisory checklist and the health centre summary of malaria cases and net usage. Unfortunately community agents and RHC supervisors were not provided with adequate training to complete them correctly. This makes any attempt to fully evaluate of the impact of the programme impossible.

The majority of MCC executives (treasurers and secretaries) interviewed recognised their knowledge gaps in filling the forms. They expressed the need for simplified and more comprehensive forms that are easier to complete. The most difficult tool was the monthly statement which summarises the number of nets received, distributed to agents and sold, income and expenditure, and money banked. In a number of communities, the monthly statement form has never been completed in full; there are always sections left blank as they are not well understood, in particular the one on banking.

A tag sheet has been introduced in an attempt to monitor the proportion of malaria cases presenting at RHC who have been using an ITN. The MCC in Kambuali, Nchelenge District were not happy with the question 'have you slept under a net in the last 7 days?', they felt that the community were saying yes when they had not actually even got a net. They have decided to give out cards (which they have made themselves) with each net retreatment. Then when a patient is asked the question on net usage at the clinic, they will verify their possession of a treated net by presenting the card. Although there are many problems around this system, it does show that the community have been empowered, that they are taking their roles seriously and are motivated.

As stated earlier, reports are sent to RHC supervisors for perusal, but because of lack of time most reports are sent back to MCC treasurers (without comments) for submission to DHMT. The DHMT in turn submits the reports to UNICEF and/or NMCC.

At the DHMT level, not a single tool was found that could be used to monitor the progress of the programme. None of the districts visited was able to give information on quantity of nets and insecticides received since the inception of the me in their districts. There was a total lack of instruments to monitor stock as well as progress in net selling/coverage per district. Tools are desperately needed at this level. The DHMT Mwense, identified a lack of forms for reporting and the prohibitive cost of photocopying them for so many communities as a major constraint in monitoring at community level. This was also mentioned by Mambilima MCC, Mwense District.

It was surprising to note that only a few DHMTs referred to the reports submitted by community treasurers. This has been the cause of lack of information on the CBMPCP progress at this level.

Suggestions for improving the monitoring and evaluation system are contained in section 5.

4.2.7 The Revolving Fund

4.2.7.1 Sales of ITNs

Both nets and insecticides have been provided to DHMTs free of charge and thereafter a 'seed supply' is distributed to communities through their rural health centres (RHC) for sale. Members of the malaria control committees and neighbourhood health committees (malaria agents) have been actively participating in selling insecticide treated nets. In some but not all of the communities visited, malaria agents each receive 10 to 15 nets for sale, and the same amount of nets is given once the first batch has been accounted for. It is understood that revenue from sales of ITNs will be used to establish a revolving fund, which in turn will be used to buy additional nets and insecticide when the stocks run out.

Although ITN prices were fixed by NMCC in conjunction with DHMTs, there are still discrepancies in net prices within different communities in the same district. Prices of ITNs vary according to the size of the net. In some communities, an extra-large treated net is sold at K15,000 while in others the same net costs K13,500. The same observation was made for double and family nets. In other communities, family and extra-large nets are costing the same price (K14,000). Prices of K-O tab insecticide also vary according to communities as it sells at K1500 in some and K2500 in others. This has brought confusion among net users and created mistrust and lack of confidence between net users and community agents, who are considered thieves.

When the sale of ITNs started in 1995, treated nets were sold for cash, on credit and in-kind payment (or barter trade). It was later noted that although vital in the rural communities where cash income is very low, the in-kind payment (goods) brought more problems with loss of 67% to 80% of the project revenue, caused by spoilage of goods exchanged against ITNs. This spoilage of goods was caused by lack of storage and transport facilities and lack of marketing skills (valuation of goods and search for buyers). In 1997 the in-kind sale of ITNs was stopped.

ITNs are also sold on credit to households. It was noted that ITNs sold on credit are only released to the buyer once the whole amount of money is paid to the community agent. In a few communities however, it was indicated that community agents release the nets before receiving the full sum of money. This situation has created confusion between communities with differing arrangements.

Money received from sale of ITNs is banked in a local bank where the community's account has been opened and thereafter a percentage (arbitrarily selected) of the revenue is transferred to 'a common basket ITN dollar account' opened at Citibank in Lusaka. It was noted that because of increased bank charges on both account maintenance and money transfer charges, communities were advised to merge their bank accounts into one account per district.

Table 11: The CBMPCP revenue from the ITN sales⁴⁹

District	Total nets and insecticides received			Total money expected	Total money in local banks	Commission for malaria agents and MCCs
	Nets	Icon (litres)	K-O Tabs	(in Kwacha)	(in Kwacha)	(in Kwacha)
Samfya	36,273	Nil	18,500	435,276,000	6,868,753.75	36,273,000
Mwense	10,250	18	7,500	123,000,000	2,328,111.20	10,250,000
Mansa	8,700	9	7,500	104,400,000	12,774,300.00	8,700,000
Nchelenge	14,000	43	7,784	168,000,000	19,236,515.00	14,000,000
Total	69,223	70	41,284	830,676,000	41,207,680.00	69,223,000

Source: NMCC (HMIS), September 2000. The quantity of permethrin received in all districts is not given

It is expected that the sale of ITNs the programme will raise a total of K830,676,000 (equivalent to US \$263,707) less commission of K69,223,000 (equivalent to US \$21,976), which amounts to \$241,731. By end of August 2000, the programme had in its local bank accounts K41,207,680 (equiv. US \$13,082) and in its dollar account US \$11,061.31, a total of \$24,143.

4.2.7.2 Management of ITN revenue

The dollar account is credited by local bank accounts using money obtained from sale of ITNs, and has been debited once for purchase of nets and insecticides (from abroad) for Samfya district. All malaria control committees enjoy the same privileges in terms of accessing resupplies of nets and insecticide regardless of how much money they have deposited into the common dollar account. The dollar account has four signatories (one signatory from each DHMT) and is controlled by UNICEF. To date, NMCC has not been involved in the financial management of project revenue.

It is believed that communities are aware of the existence of both local bank account and the common dollar account, but communities may not understand the mechanisms and how to operate them, and some fear losing their money if UNICEF ceases involvement in the project. From the observation, no MCC is capable of reporting their current balance with accuracy in terms of money, although they have done themselves all the banking and expenditures.

⁴⁹ Note that the figures in the column for 'total nets and insecticide received' differ from those in table 4; data for each table were collected by 2 different consultants at different times, and with the exception of Nchelenge and possibly Mansa. Though the only source of this type of data for the project, data available at district level are unreliable.

4.2.8 Sustainability

4.2.8.1 Financial and organisational sustainability

The first batch of nets and insecticide were provided free as 'seed supplies' to the DHMTs, who then distributed them to communities. The revenue from these sales is then to be used to purchase the rest of the ITNs needed to cover the remainder of the population. 50% of the calculated nets required are donated as seed ITNs by the partners. If 50% of the required ITNs are supplied, and their sales should cover the cost of the other 50%, then at least 100% cost recovery is required. If there are no increases in prices for purchasing the nets and insecticide and no increase in any of the related costs, such as, freight and distribution, plus no leakage of ITNs, then 100% cost recovery from the seed nets would be adequate. Cost recovery rates for Mansa and Mwense were calculated at 66% and 57% respectively (see section 4.1.7), therefore more input by the donors than just the original seed ITNs will be required, as the revolving fund does not have complete sustainability.

The poor supervision and monitoring of the programme has contributed to the low rates of cost recovery due to leakage of nets and insecticide from the revolving fund. The reasons for these losses include damaged nets, stolen nets, perceived ineffectiveness of insecticide, stolen money, 'burning of money in house-fires', loss of money through the giving of ITNs on credit.

In the pilot project in Samfya, the barter system precipitated a very substantial loss to the revolving fund. For this reason payment in kind for nets was stopped. A system of payment by instalments was introduced. To prevent the problem of payments not being fully completed, it is strongly recommended during training that the nets are not given to the client until the last instalment has been received. This system is being utilised and in many communities is the primary method of payment for nets. There were also problems with the accountability of funds in one of the communities, Kasanka.

In Kafutuma, Nchelenge District, the lady storekeeper of the MCC was taken to the police cells for stealing nets. Of the 43 missing nets 18 were recovered, one of which was subsequently stolen from the police station. One of the malaria agents from Kafutuma (a teacher) has recently been transferred to a neighbouring community he still has several thousand Kwacha outstanding from his ITN sales.

It must also be recognised that the life of a mosquito net is only likely to be a maximum of 5 years (often less). There are 7,949,600 (extrapolated from MARA data ⁵⁰) people at risk of stable endemic malaria in Zambia, this creates a need for a standing crop of 3.18 million nets⁵¹, or 635,986 nets per year. Using the cost to donors per net delivered to the DHMT (US\$17.61 being considered the best estimate) then US\$11,199,713 per year is needed to cover this population with an ITN. This figure does not take account of vulnerability. If only under 5s and pregnant women were to be included, then the population at risk would be 2,019,198 and a standing crop would be 1,153,827 ⁵², or

⁵⁰ % population at risk of stable endemic malaria and the % population at low risk (low transmission) or at risk of epidemic malaria extrapolated from the MARA population total of 8,080,935 (current population is 10,460,000). % population at negligible risk is less than 1% and has been excluded from further calculations.

⁵¹ Presuming 2.5 people per net

⁵² Presuming 1.75 people per net – as those at risk in this scenario do not include the husband

230,765 nets per year. A total of US\$4,063,780 per year would be needed to cover this population of those most vulnerable to severe disease and at high risk.

Organisational sustainability is dependent upon both the capacity to procure nets and revolve the revenue from net sales into new net purchases, and the capacity to sustain demand creation. This is dependent upon the fostering of a domestic commercial market for ITNs in Zambia. For this to occur the demand creation by the CBMPCP needs to 'crowd in' the market and private sector suppliers, and the subsidisation of the ITNs in the programme should avoid 'crowding out' any existing private source of nets and insecticide.

5.2.8.2 DHMT views on the question of sustainability

The attitudes towards sustainability vary greatly between the DHMTs. In Mansa, there was great concern about how to make the programme sustainable. The DHMT suggested that they could possibly try to access their grant and user fees to help with funding bicycle repairs. They were also prepared to look at their ability to replace bicycles when needed.

The other DHMTs were less optimistic about the possibilities of sustainability.

4.3 Review of UNICEF support to Malaria Control in Zambia

4.3.1 Support to NMCC

In recent years, the national malaria control programme has suffered from several changes in line management, moving from the Central Board of Health to TDRG-Ndola in 1996 and back to CBoH again in 1999, leading to lack of continuity of programme management and programme interventions. This has been accompanied by considerable staff turnover in the Programme Manager's position, further weakening the programme. Since 1998, UNICEF has paid the salary of the current Programme Manager, a highly motivated individual, and the programme has been considerably strengthened as a result. UNICEF has also provided significant technical assistance to the national programme, with particular focus on the monitoring and evaluation of the CBMPCP in Luapula Province. The UNICEF Health Project Officer has provided ongoing technical and management support to NMCC in the development of the national programme (such as in development of the malaria situation analysis and the RBM strategic plan, and participating in selected technical working groups) and in managing the community based programme.

A major weakness both within UNICEF and within NMCC is the lack of management information on the CBMPCP leading to inefficiencies in programme management at all levels. Issues arising from this dearth of information have already been discussed in some detail.

4.3.2 Support to District and Community Levels

In the period 1994 to 2000, UNICEF has provided \$1.73 million towards the community based malaria prevention and control programme in Luapula Province. This covers the broad range of activities associated with community development programmes (sensitisation, planning, training, commodities⁵³, technical assistance, IEC campaigns, per diems for health workers etc.). The detailed findings of a rapid review conducted in August and September 2000 are covered in sections 4.1 and 4.2 of this report. Key findings which have important implications for future UNICEF support are summarised here.

Planning and management

The CBMPCP strategy relies very heavily on staff in DHMTs, RHCs and NHCs to implement the programme. However, it is clear from the current rapid review and previous evaluations of the programme (1996, 1998) that these institutions are generally weak, with infrequent meetings and almost non-existent supervision of programme activities or follow-up. Secondly, the strategy places an additional burden on health centre staff in particular, but also at the district, at a time when they are facing considerable staff shortages and are already overloaded. Of particular concern is the capability of these staff to deliver on project activities when health facilities are struggling to meet even basic health service requirements. The success of CBMPCP in any district therefore currently depends on the strength of the DHMT.

Staff motivation in rural areas of Zambia is a problem, leading to understaffed rural health facilities. CBoH is currently awaiting the green light from MOH to weight salaries of employees working in remote health facilities in an attempt to motivate and retain these staff.

⁵³ Nets, insecticides, dipping equipment, bicycles, stationery, entomological equipment, etc.

ITNs

The findings of both the current review undertaken by the Malaria Consortium and the review undertaken by the Harvard student⁵⁴ found that the CBMPCP is not an efficient system for the distribution of nets, insecticide, net treatment and retreatment. The latter review compared the CBMPCP with the SFH supported ITN project in Eastern Province and, while they found similar rates of cost recovery, the SFH project was more efficient in getting nets sold. One important difference between the two projects is the quality and scale of IEC, being much more developed in the SFH project. Both projects however rely on volunteers selling nets and insecticide and on health workers for management of community finances. A number of recommendations are made in section 5.1 to improve the existing CBMPCP distribution system, involving better targeting, rules governing sales, systems for monitoring, supervision and reporting, etc.

Based on the number of nets sold by the CBMPCP since January 1996, it would take 415 years to achieve 100% coverage of all Zambian children under five and pregnant women using the current approach.⁵⁵ It is therefore proposed that UNICEF considers supporting the piloting of at least three alternative approaches, in order to identify the most cost-effective approach to getting more widescale coverage of nets among target groups in the Zambian context (see section 5.3).

Case management

CBMPCP was originally designed with the intent that community volunteers would be trained to provide early diagnosis and prompt treatment of uncomplicated malaria, as well as other common diseases and conditions identified by the community, referring complicated and severe cases to the relevant level of the health services⁵⁶. They would also be provided with drug kits containing basic essential drugs, including first line antimalarials. This aspect of the programme has been neglected in favour of ITN sales and management of the revolving fund, in spite of recommendations to address this in both the mid term review (1996, recommendations 5.6 and 5.7) and evaluation (1998, recommendation 7.6) of the pilot projects in Samfya District.

This finding has important implications for the clinical management of malaria in Zambia. The current situation in Zambia is typified by rapidly increasing case fatality rates over the past ten years. The health services face acute shortages of health staff (particularly in remote, poor communities), inadequate supplies of first line and second line antimalarials and related supplies⁵⁷, poor HIS, inadequate training and supervision, and little financial incentive to perform as well as possible under these constraints. Added to this, access to health services by rural populations is poor, knowledge and practices related to malaria prevention and treatment are inappropriate, and care is often sought outside the formal health services.

⁵⁴ Michiko Nagashima. A study of two large scale ITN promotion programmes in Zambia. Draft report.

⁵⁵ 1,153,827 nets to cover pregnant women and children under five @ 1.75 people per net/12,497 nets sold to date x 4.5 years (Jan 1996 to June 2000)

⁵⁶ Jenny Hill. Report on the design and development of a comprehensive community based malaria control strategy for implementation in Luapula Province. 20 February – 9 March 1995.

⁵⁷ Only 40% of the required chloroquine, 24% of the required SP, 20% of required quinine injectable and less than 25% of needles and syringes for injections was received in Mwinilinga District during 1999. Source Mark Young's report.

Future UNICEF support for malaria control needs to address these issues. UNICEF's comparative advantage is in community and household initiatives, such as Growth Monitoring, Safe Motherhood, MTCT, water programmes etc, all of which provide useful entry points into communities. It already supports the implementation of IMCI, which aims to improve case management of malaria (among other childhood diseases) at health facilities.

IEC

IEC has been a relatively low priority in the CBMPCP and not surprisingly is very weak. It is not known to what extent the absence of an IEC strategy, with only *ad hoc* IEC activities taking place in a few communities, has contributed to the poor uptake of ITNs in many of the communities. Certainly this aspect of the programme needs considerable strengthening, and this should complement and build upon the development of a national strategy for IEC for ITNs.

Community sensitisation

Community sensitisation has been weak, with different approaches being used in different districts and even within the same district. Whilst participatory approaches have been used in training, the community as a whole has not been very involved in the development of the project, identifying volunteers, and in making decisions on pricing of nets. Suggestions to improve community sensitisation involving participatory approaches to community identification of health and other problems in the community are made in section 5.

Malaria in Pregnancy

UNICEF provides significant support to Safe Motherhood components including antenatal and postnatal care. This provides an excellent opportunity to improve the management of malaria in pregnancy, building on the existing mechanisms of support, in the antenatal periods, and for improving care of the newborn during postnatal care.

4.4 Review of capacity building strategy and materials for CBMPCP

A review of training materials for CBMPCP (training manuals for DHMT and community members) had already been covered in section 4.2.1.2 but two general comments are:

- It would be advisable to have more of a focus on IEC if possible (section 8 of the manual). This seems to be a weak point from the various review and comparison studies that were done. More emphasis should be placed on the importance of communicating the messages, assistance/suggestions with various forms of IEC communication and perhaps some aids/materials as well.
- It would be advisable to put a 'Key Message' in each section, which is highlighted to stand out and can be used as a reference point for participants, something that they are likely to take away with them (even if they remember nothing else!).

It is preferable to provide 'comprehensive' health training for community volunteers, rather than having large numbers of variously trained front line workers. The final result will be as many fully trained community health workers (CHWs) as possible. The CBMPCP training can make up part of the CHW training, perhaps as one 'module', but more emphasis should be placed on ensuring that as many rural communities as possible have trained CHWs with drug kits (as well as ITNs). Make use of those volunteers (MAs) who have already received some training, assuming that they are functioning adequately (this can be assessed by the NHC and RHC staff) to be

upgraded to full CHWs. There have been volunteers trained in many projects, by many organizations and in many areas, not just Luapula alone. Some of these are in the field of malaria control, some in nutrition. Identification of these volunteers and further training in community-based IMCI would be of benefit to the overall RBM programme in Zambia.

At district level, capacity needs are mostly in the area of supervision and monitoring, whereas at the community level it is mostly in the area of IEC provision as well as early management of illness. Therefore, support is needed for efforts that are aimed at improving the capacity in these two key areas. From the comparison study that was undertaken to examine the Eastern Province and Luapula models, it is clear that involvement of the DHMT at the beginning is one of keys to success and sustainability through establishing a sense of 'ownership'. The involvement of a multisectoral management group, including other organisational and community representatives in addition to DHMT, in initial stages might be an even more effective approach. It was also clear from this comparison that intensive IEC and community promotion at the initial stages of an ITN programme is another key to success.

Motivation of volunteers is often a difficult factor in continued work and high drop-out rates result. If there is supportive supervision available, with some minimal (non-monetary) incentive also involved, it is more likely that volunteers will continue to serve their respective communities. We have seen that supervision from the RHC and DHMT is often a problem. Support provided from within the community, through MCCs, should also be maximised. A couple of the members could be identified as 'volunteer supervisors' and given the extra responsibility of supervision the CHWs in their community. It is these 'primary CHW supervisors' who should sit on the NHC and report on activities to the local RHC. It is also these CHW supervisors who can in turn be visited regularly by RHC staff. To be effective and to be manageable, each volunteer should not have more than 50-100 households under their 'care'. This would mean an increase in the number of volunteers as the project expands.

There is a National CHW Module, with guides and handbooks for both CHWs and facilitators. There is also a booklet for use at the Neighbourhood Health Committee level and a Guide to Participatory Planning. Malaria is currently imbedded in the full, integrated health training for CHWs, or which malaria plays a key part.

In summary, the reduced capacity at the DHMT and RHC level will always be there to some extent, despite training, as staffing problems will persist. This is most pronounced in the most rural areas. Therefore it would be advisable, and most likely more effective, to put more effort and resources into the community-level training:

- upgrading active malaria agents to CHWs
- training more CHWs
- providing trained CHWs with drug kits
- strengthening supervision within communities by identifying CHW supervisors
- Non-monetary incentives would need to be provided in the form of bicycles and other necessary materials for carrying out duties, commission from drug and ITN sales, and ensuring that necessary bicycle repairs are made. On-the-job refresher training can be provided on a regular basis by RHC staff (as part of supervisory activities, with a selected topic covered at each meeting) also serves as an 'incentive' for the continuation of activities.

- Multi-sectoral District Development Committee as coordinating body for RBM activities at the district level, with appropriate training in management and participatory techniques.
- Ensure participatory processes are followed as much as possible in the above activities.

Finally, at the UNICEF Country Office level, it is recommended that there be a 'malaria focal person' who can coordinate the UNICEF efforts in this regard, and it is noted that this appointment is planned for the near future.

5. Recommendations

Recommendations contained in sections 5.1 and 5.2 are responses to specific implementation problems encountered during the current review. They are made within the context of the existing framework of the CBMPCP. Recommendations in section 5.3 assume substantial changes in the structure of the CBMPCP will be made firstly in pilot areas and then elsewhere pending evaluation.

5.1 Strengthening existing CBMPCP activities

Central level

- 5.1.1 Review the content of the course and the messages that are given, especially with respect to the technical aspects of ITNs and the retreatment process. The treatment / retreatment process by the malaria agents should be checked from time to time. A useful tool is available for this ⁵⁸, although this tool was developed for the testing of kits for home treatment, it may be readily adapted for use in evaluating the procedure used by the malaria agents. It may be a more useful learning process, if agents from one area, used the checklist to monitor the work of agents in other areas.
- 5.1.2 Action should be taken quickly to ensure that malaria agents are amongst those trained as CHWs in their communities. This means that NMCC should communicate with ZIHP and UNICEF at central level, and with the DHMTs, who should then instruct RHC staff and the communities. It is possible that the communication gap was between central level and the DHMTs. It is the responsibility of the NMCC to follow-up constantly and request a list of names, from the DHMTs, for the CHW training that they can compare with the list of names of malaria agents.
- 5.1.3 The recommendation that only those who have been trained in CBMPCP hold positions in the MCC should be re-emphasised.
- 5.1.4 A small household study should be conducted amongst ITN owners and non-owners. Reasons for having bought and the barriers against buying and retreatment of nets should be determined. A suggested tool is included as Annex 14.
- 5.1.5 The effective life of the insecticide on nets in the field should be determined through operational monitoring. Bioassay kits are available from WHO for this purpose.
- 5.1.6 Insecticide resistance should be monitored amongst the vectors and amongst nuisance biting mosquitoes. Any resistance amongst nuisance biters will have an effect on the perceived effectiveness of the insecticides.

⁵⁸ Field testing home treatment kits: observation checklist. The Malaria Programme, London School of Hygiene and Tropical Medicine, in *Insecticide Treated Net Projects: A Handbook for Managers*, D. Chavasse, C. Reed, K. Attawell (1999)

- 5.1.7 NMCC should ensure that Samfya DHMT send out a letter to all communities with the correct prices for the ITNs clearly stated. The letter should also endorse the compensation to those who have paid K14,500 for the ITNs to be given their first retreatment free.
- 5.1.8 Clear lines of responsibility for the CBMPCP at central level should be established. There should be defined roles amongst NMCC staff and partners so that someone has responsibility for such areas as supplies, training, implementation, supervision and monitoring. It is also vital that there is a role defined and carried out for the collation and analysis of data received from the communities, via the districts. This analysed data should then be fed back through the DHMTs to the communities. Any reports expected at central level and not received should be followed up and action taken to ensure receipt. The data analysis specialist will act as a trouble shooter to inform relevant people when there is a problem.
- 5.1.9 A 6 monthly newsletter should be developed by the NMCC IEC specialist in collaboration with the partners and distributed to all MCCs, NHCs, RHCs and DHMTs in implementing districts.
- 5.1.10 The implementation of the CBMPCP should be discouraged in urban centres, particularly in large hospitals such as St. Paul's Mission Hospital in Nchelenge. It is doubtful that a community-based programme can function effectively in a busy urban centre, especially a busy hospital. It is also very likely that a subsidised ITN programme in the centre of an urban bazaar will crowd out the existing commercial market. Although there were no ITNs for sale in Nchelenge bazaar there were nets. DHMT and the malaria working group should consider how to offer insecticide treatments to the people who buy untreated nets from commercial retailers, and the CBMPCP, as it is, in St. Paul's should be disbanded.

District level

- 5.1.11 Although the length of the training course is evidently too short, especially in the areas of financial management, to ensure high quality monthly statement returns, it is felt to be more important to concentrate time and effort on the constant supervision of the programme. It is felt that this would be much more profitable in the long term than investing further time and effort in lengthening the courses or introducing more short term refresher trainings. If the supervision were adequate the need for refresher trainings would be reduced.
- 5.1.12 In the pilot communities from each district, the areas not covered by agents need to be identified, and agents selected and trained. DHMT, together with the RHC staff should thoroughly review which areas within their communities are not being covered by agents and nominate people from these areas for training. Coverage of all areas should then be monitored.
- 5.1.13 To avoid the long period between training of the malaria agents and arrival of the supplies, and the resulting demotivation of the agents, they should be trained after arrival of supplies.

- 5.1.14 It is suggested that the District Environmental Health Technician (EHT) is the most suitable person to supervise the CBMPCP activities. This may release the managers and other senior persons at DHMT for routine duties.
- 5.1.15 A malaria working group should be formed at district level to include a member of each DHMT, MCC, NHC, any other NGOs or CBOs with an input into malaria control, and private marketers who are currently, or prospectively selling nets and/or insecticide.
- 5.1.16 DHMT through the malaria working group should monitor how many retail outlets in their district are selling nets/insecticide and their sales levels (suggested tool in Annex 15).
- 5.1.17 Members of the malaria working group should be utilised to help DHMT in the supervision of the programme. Exchange visits between districts and between communities should be encouraged, so that ideas may be shared.

Community level

- 5.1.18 Awareness raising campaigns in all communities, dramas, presence at ANC / MCH clinics, etc. should be especially vigorous at the beginning of and during the peak transmission season and during the season of main cash availability.
- 5.1.19 Awareness raising should be implemented in schools, this may start with health education classes on malaria, cause, symptoms, treatment and prevention. The students could even be encouraged to develop and present dramas to the local community.
- 5.1.20 There should be more involvement with the schools for possible expansion of the IEC component of the programme. Ideas such as peer education should be considered.
- 5.1.21 It was suggested by several RHC staff that more than one person at each RHC should be trained in CBMPCP, the second acting as a deputy to the RHC supervisor. This could be either a member of the NHC (who has undergone the malaria agent or CHW's training) or from the RHC (where it has more than one trained staff), preferably a nurse or clinical officer. The reason being that whilst one person was on outreach work, the other could provide cover and that they could also support each other. As the major problem is the financial accounting it would be better to identify a community member, with an aptitude for accounts and an ability to teach, to act as a financial supervisor. The RHC staff should still be the chief supervisors, but the accounts and monthly reports should be checked and any problems rectified by the NHC member before being passed to the RHC staff.
- 5.1.22 It is suggested that the RHC supervisors should append their signatures on the monthly statements to certify their approval of the information therein before sending them to the DHMT.
- 5.1.23 A central point for sales of ITNs and retreatments should be identified and staffed by malaria agents on a rotaion basis. The location of this central sales point

should be advertised at the RHC, schools and any other public building, so that people do not have to search around for a malaria agent if they decide to buy an ITN or have their net retreated.

- 5.1.24 Not very many of the malaria agents had ITNs in their family. Subsidised ITNs for malaria agents should be considered.
- 5.1.25 It is well recognised that if there is one net within a household, then the husband/father, has priority for use of this net (even amongst the malaria agents who had nets). It should be accepted that this a cultural reality which will not be changed easily or quickly. One way to work within this culture is to offer a second net more cheaply, or 'buy one get one free'.
- 5.1.26 Advocacy at community level to promote the role of CHWs as part of IEC.

All levels

- 5.1.26 A vigorous 'community sensitisation' process before implementation of the programme in each community, rather than sensitisation of purely prominent members of the community. Correct messages being delivered to a wider audience would protect against the damaging effect of incorrect messages by a minority. Participatory methods of sensitisation should be encouraged, possibly in collaboration with CARE International who have experience of using several Participatory Learning Tools in Zambia. UNICEF Mozambique are using a tool called Participatory Malaria Prevention and Treatment (PMPT) as their entry point into the community for the Community-Based Malaria Control Programme in Zambesia Province. This is a process based on community assessment and analysis and participatory learning for action. Participatory methods and approaches are used through which the members of the community develop a profile of malaria in their own community. PMPT does not stop at the information transfer stage, rather, by assisting the community to then plan for the steps they wish to take for malaria treatment and prevention, a process of behaviour change is facilitated. It may be possible to adapt these tools for use in Zambia, they may also be adapted to provide entry into the community for other programmes, such as water and sanitation.
- 5.1.27 Malaria agents should be employed as a resource to help in any community health activities where volunteers are needed. This would help to increase their motivation. There is a general feeling that they are not respected as health workers, any action to show them respect and their general acceptance as health workers would serve to increase their motivation.
- 5.1.28 Ensure that K-O Tabs have an expiry date marked on their packaging, and that the malaria agents know how to store them separately from new supplies with different expiry dates.
- 5.1.29 The storage of large numbers of nets in the community should be discouraged, the agents should only receive small numbers of nets, 5 to 10, which will be replenished when they pay the money from their sales.

- 5.1.30 Advise malaria agents to treat the untreated nets bought in the market, when asked to do so by clients. Ensure the provision of surplus K-O Tabs, to enable the malaria agents to provide a comprehensive retreatment service.
- 5.1.31 Prices should be uniform between districts and between communities, it is not however recommended that the different sizes of nets should be the same price. In Samfya, in the communities where incorrect information had been given about the price of the ITNs (all sizes K14,500), the communities were not complaining about the price per se, but they did not want to pay the same price for a small net as for a large one. If the programme wishes to introduce a standard price of K12,000 for all net sizes, a survey of the attitude of the communities to this proposal should be made first.

5.2 Strengthening Monitoring and Evaluation of CBMPCP

In the current 10 districts, several recommendations to improve monitoring of processes (including financial management), outcomes and a limited number of impact indicators are made.

5.2.1 Monitoring

Ideally, monitoring of malaria control activities should take place at all levels of the system starting from:

- (1) The community level, where all MCC/NHC members should ensure proper monitoring of their routine activities. All nets paid on credit or cash should be recorded in the register. Net (re)treatment should be reported accordingly. The monthly statements (financial reports) should be completed correctly for further analysis of the program's acceptability and its subsequent sustainability in the districts.
- (2) At RHC level, malaria control supervisors should liaise frequently with community agents on the programme's progress. The RHC supervisor should meet with community agents at least once a month. At the health facility, the RHC supervisor should monitor any increase or decrease of malaria cases among community members (while considering ITN users and non-users) and report on any deaths (caused by malaria or other causes) among community members. According to the RHC clinical officers-in-charge, treatment efficacy and/or failure (with antimalarial drugs) is being monitored in most communities and results communicated to DHMTs. It is also noted that NMCC is in the process of setting up sentinel sites for both CQ and SP treatment (failure/efficacy) status in various parts of the country. It is appealed to all RHC clinical officers-in-charge to submit the summaries of their monthly reports to DHMTs.
- (3) At DHMT level all monthly reports are received for compilation and submission to UNICEF and/or NMCC. Normally, at this level, all monthly reports should have been summarised and preliminary analysis done for follow up. Currently this is not being done.

- (4) At NMCC level all reports are summarised and data input in its database for HMIS. At this level, the monitoring reports on program progress are analysed viz. a viz. the DHMT plan of action.

For proper monitoring and supervision systems of CBMPCP activities, information feedback should be established between all the programme actors starting from the national level down to the communities. This information flow or feedback once established would help make progress in project implementation, in order to reach its objectives.

The improvement of the monitoring and evaluation systems of the malaria control will enable programme managers to:

- measure the programme progress and to assess its achievements,
- detect and solve problems which may hinder the program penetration,
- assess the programme effectiveness and acceptability by community members,
- guide allocation of programme funds and/or resources,
- provide the information needed for revising policy and replanning the interventions (or control activities) and
- assess its sustainability at community level.

To achieve these aims (1-6 above), a number of instruments or tools have been developed and pretested. In total, ten tools have been developed for use at DHMT, RHC and MCC levels. They differ from the ones currently in use in that they focus on the programme's penetration and health impact, and less on the financial aspects of the programme. The tools can be found in Annexes 3 to 13.

A list of activities to be monitored and evaluated (at all levels) is given below in Tables 12 and 13. A summary of the monitoring tools developed for different levels are as follows:

- (1) Four tools have been developed for DHMT (Tool 1: Stock control of mosquito nets and insecticides received from NMCC/UNICEF, Tool 2: Stock control of mosquito nets and insecticides distributed to RHC/MCCs, Tool 3: Mosquito net coverage, Tool 4: Summary of all MCC Financial Reports).
- (2) Two tools for RHC (Tool 1: Malaria cases in ITN users and non-ITN users, Tool 2: Malaria treatment efficacy).
- (3) Four tools for MCC/NHC level (Tool 1: Stock control of mosquito nets and insecticides, Tool 2: Number of nets and quantity of insecticide given to community agents, Tool 3: Summary of nets sold and (re)treated, Tool 4: Financial report).

The training on financial management of (community-based) funds needs to be made as simple as possible and take into account the educational level of participants or trainees. The training should be focused, interactive and with more practical sessions on various tools or instruments. During the training, emphasis should be placed on the importance of each tool and how to complete them. At the end of the training course, all participants should be tested and the course evaluated. It is recommended that training courses should be evaluated and findings used to improve the CBMPCP training module.

5.2.2 Evaluation

The evaluation plan of the CBMPCP in Luapula province should include quantifiable and measurable objectives of relevance to the information system for the national malaria control strategy. The evaluation plan should be grouped into 3 levels, namely: the process level (that refer to program activities), the outcome level (which addresses priority approaches, strategies and interventions) and the impact level (that refers to changes in the population's health status). Indicators should include relevant 'core indicators' for RBM⁵⁹. Suggested indicators are provided in table 14. There will be need to concentrate efforts on poorly functioning and/or inaccessible health centres in the collection of periodic surveillance data.

If the programme is carried out effectively, we may expect a greater reduction in malaria prevalence than the target of 5% (in target communities) stated in the 1995 POA for CBMPCP in Samfya District. It is sound to stipulate reductions of 15-30% in malaria morbidity and mortality over a five-year period.

A summary of recommendations for improved monitoring and evaluation include:

Central Level

- Need to establish a set of 'key indicators' for malaria, and the methods to accurately measure these indicators.
- Ensure that as many as possible of these key indicators are included in the HMIS.
- Complement the HMIS by periodic surveillance data, which is further linked and coordinated with data gathered by other organizations such as ZIHP (ITN coverage, drug resistance).
- Institute data collection based on surveillance in a few, specific sentinel sites on a longitudinal basis. If this is felt to be too costly or not manageable, then periodic, cross-sectional household surveys can be substituted.
- Ensure system for regular dissemination of results back to the district, from district to RHC and RHC to community. This would be improved if there was a 'focal point person' for monitoring and evaluation of malaria activities at each level.
- Consider setting up a system of 'benchmarks' or 'minimum standard' for reporting from districts, which the DHMT would need to meet in order to receive the necessary logistics. In addition, a quality control system should be in place, in order for the NMCC/CBoH to identify problems at DHMT level and take appropriate action with training, capacity building etc.
- Limited use of sensitivity tests for assessment of insecticide effectiveness, complemented with information from neighbouring countries and the region (through WHO), which would provide the necessary data for decision making.
- Use the EPI (30 x7) cluster sampling method⁶⁰ in the assessment of ITN coverage and ITN KAP as part of a period evaluation system in selected sentinel sites.
- As part of RBM, ensure that the periodic DHS in Zambia includes a 'malaria module' to the overall basic survey design, with the necessary RBM indicators.

⁵⁹ see section 3.3.9 in report by Mark Young. Support to the Zambian national RBM Programme. October 2000.

⁶⁰ as described in section 3.3.9 of Mark Young's report.

District/Community Level

- Ensure timely collection and regular reporting of CBMPCP data to central level.
- Ensure system for regular dissemination of results back to the district from the central level, from district to RHC and RHC to community. This would be improved if there was a 'focal point person' for monitoring and evaluation of malaria activities at each level.

Table 12. Tasks to be monitored during the program implementation

Tasks to monitor	Elements concerned	Persons (or team) responsible	Methods and source of data collection	Time for data collection	Costs and supporting agency
1. Training of community agents and DHMT/ RHC supervisors	- Number of trained personnel - Quality of trained agents/ supervisors	NMCC staff, UNICEF	Selection of trainees at community level Selection of supervisors at DHMT and RHC levels	Half-yearly	UNICEF
2. Development of educational and IEC materials	- Type and quantity of developed materials - Quality of developed materials	NMCC, DHMT, UNICEF	Review existing materials, Develop and pre-test new materials	During course of program	UNICEF, NMCC
2. Net and insecticide supply/distribution	- Speed and cost of supply - Quality assurance of supplies	DHMT	Check monthly statement, Review stock control of ITNs	Monthly	Nil
3. Stock control (nets and insecticides)	- Stock situation - Conditions and adequacy of stores	DHMT supervisors RHC supervisors	Review records at DHMT and Stock ledger at MCC	Monthly	Nil
4. Net treatment and retreatment	- Procedures and techniques - Dosages, timing and frequencies of net treatment - Quality and efficacy of ITNs	Community agents	Review of registers at MCC	Periodically	Nil
5. Supervisory visits for malaria control activities	- Supervisory time table (DHMT and RHC levels) - Quality of supervisory reports	NMCC, DHMT, RHC supervisors	Review the program records at DHMT, RHC and MCC levels	Monthly	Nil
6. Community mobilization/participation	- Suitability of IEC activities - Delivery mechanisms of IEC messages - Community involvement procedures	NMCC, DHMT, RHC supervisors and community agents	Organize meetings at community level	Quarterly	Nil
7. Vector behaviour and the effect of ITN	- Potential of vector feeding and resting - Vector susceptibility status	NMCC, TDRC	Surveillance in sentinel sites, Collection of mosquitoes indoor and outdoor, Mosquito bloodmeal analysis Bioassay tests	Yearly	TDRC

8. Persistence of insecticide on mosquito nets	- Verify treatment quality of mosquito nets, - Verify insecticide residues on washed nets	NMCC, TDR	Surveillance in selected locations Bioassays	Yearly	TDR
9. Intersectoral collaboration	- Suitability of collaborative institutions and organizations - Effectiveness of collaborative work	NMCC	Inquire on collaborative institutions, organizations and agencies	Periodically	Nil
10. Health management information system	- Type of information and collection method(s) - Information storage, analysis and interpretation - Information dissemination or feedback - Information usage (decision-making, program adjustments)	NMCC	Review reports Review Tools Information retrieval from (various) software used for storage	Quarterly	NMCC UNICEF

Table 13. Program outcomes

Outcomes	Indicators ⁶¹
Net coverage	<ol style="list-style-type: none"> 1. Proportion of households with at least one ITN 2. Proportion of all households with 1,2,3 or more ITNs 3. Proportion of targeted communities with at least one malaria agent/CHW selling treated nets and doing net retreatment 4. Proportion of households reporting re-treatment of nets once or twice in past year 5. Proportion of children under 5 years of age sleeping under a treated net any night in past 7 nights 6. Proportion of pregnant women sleeping under a treated net any night in past 7 nights 7. Proportion of other vulnerable groups (e.g. most poor) sleeping under a treated net 8. Number of districts that have reached target coverage rate (currently 100%)⁶²

⁶¹ These indicators will be measured through household and facility surveys, with the exception of some community mobilisation and sustainability indicators which will be collected during periodic review of project documents.

⁶² This objective should be revised to 60% ITN coverage among pregnant women and children under five years of age, by 2005, in line with the Abuja declaration.

Behaviour change through KAP	<ol style="list-style-type: none"> 1. Proportion of targeted households with at least one member aware of proper use, maintenance and benefits of ITNs 2. Number of IEC materials produced (at national level) and distributed to districts and villages/communities 3. Proportion of household members with knowledge of correct malaria prevention and control practices
Malaria treatment and prophylaxis	<ol style="list-style-type: none"> 1. Proportion of under fives with fever in past 2 weeks who were treated within 24 hours after onset of fever 2. Proportion of under fives completing full course of treatment 3. Proportion of pregnant women receiving and complying with prophylaxis/IPT in pregnancy
Sustainability of the program	<ol style="list-style-type: none"> 1. ITN subsidisation rate 2. Proportion of ITN revenue which has been deposited in a bank account in each community 3. ITN revolving fund replacement rate 4. Number of community agents capable of remitting all the proceeds from ITN sales 5. Number of districts capable to make an effective procurement (of resupplies) and distribution of nets and insecticides 6. Number of communities that have accepted the program
Community mobilization	<ol style="list-style-type: none"> 1. Number of meetings, seminars and workshops conducted in the district and their attendance 2. Community's knowledge about malaria 3. Number of community members attending health facilities with malaria

Table 14. Programme impact

Impact	Indicators	Source of data
On malaria morbidity and mortality: (In-depth analysis of rural health facility data)	<ol style="list-style-type: none"> 1. Malaria incidence in ITN users and non-users (per 1000) 2. Malaria incidence rate in children under five (per 1000 children underfive) 3. Proportion of chloroquine treatment failures 4. Number of deaths in under fives and pregnant women (All-cause mortality) 5. Malaria case fatality rate in under fives and pregnant women 	Survey ⁶³ HMIS HMIS HMIS HMIS HMIS

⁶³ This could entail exit interviews at health facilities or household surveys.

5.3 Future UNICEF Support to Malaria Control in Zambia

5.3.1 Central Level

Planning and management

Continued support to NMCC for the Programme Manager, to take overall responsibility for managing the CBMPCP, is essential if the programme is to improve and expand. In addition to providing support for the Programme Manager's salary, the programme would benefit from improved management capability. Options include providing management training of existing staff, or to seconding a management expert to NMCC for a time limited period, during which management skills and systems are transferred.

Initial work should focus on the 10 existing project districts and address immediate problems identified in the rapid review, according to specific recommendations outlined in section 5.1 above. Secondly, there are certain management and systems issues which need to be streamlined, including an overhaul of the information system based on the recommendations in section 5.2. Once these more immediate problems have been addressed in the existing projects, three alternative mechanisms for distributing ITNs should be implemented on a pilot basis and evaluated one year on, before planning for expansion of the programme should be considered. Details of the proposed alternative mechanisms are discussed below.

In planning for the expansion of the UNICEF assisted CBMPCP, it is important that this links into a strategic plan for the country as a whole. The RBM strategy specifically acknowledges the need for public-private partnerships to ensure availability of nets and insecticides to all sectors of the population (objective 2 of the RBM/ ITN strategy), which draws on the comparative advantages of different strategies in order to target appropriate audiences (objective 2, activity B). It is proposed that a *National ITN Steering Committee* is established, with representatives from NMCC, donor agencies, NGOs, private sector etc. to serve as an advisory and coordinating body - to define policy, plan, coordinate and set standards for programme implementation, for programme evaluation, and to identify resource requirements. This is different from what is currently proposed in the RBM strategy, which is to develop an ITN policy, which is a time limited exercise. This would be only one of the functions of the proposed steering committee, and this policy would be reviewed periodically to reflect new developments (e.g. a growing commercial sector, changing norms). This will be essential if NMCC/CBoH is to achieve the RBM target of 'affordable nets and insecticide available to all targeted hard to reach/rural and vulnerable groups by 2005', with an estimated number of nets required at about 2 million.⁶⁴ It is important that subsidised programmes are not run in a way that will undermine ('crowd out') the growth of a competitive market for nets and insecticides within Zambia.⁶⁵

A priority task for the Steering Committee will be to review the map for 'Current and proposed ITN strategies in Zambia'. The map currently shows targeting of different strategies in different districts in Zambia, each of which is supported by different donors and NGOs. However, the RBM strategy recognises that 'every district will have sectors of the population which are very poor, orphans, refugees etc.'. Similarly almost every district has high and middle income households. So, rather than each donor or agency

⁶⁴ Roll Back Malaria Strategy for Zambia, May 2000

⁶⁵ RBM target for 'well-established commercial distribution of bednets and insecticide by June 2001'

providing support for specific geographical areas, a more strategic approach that considers the comparative advantages of the various partners and their ability to target specific subgroups of the population will be far more effective in achieving RBM targets. In marketing parlance this is known as 'segmenting the market'. UNICEF funds to the public sector need to target only the most vulnerable groups⁶⁶, the commercial sector the high to middle income households, and NGOs the middle to low income households.

Better targeting of ITNs

The current CBMPCP strategy is not reaching the intended target groups (pregnant women and children under five). Mechanisms to improve the identification of vulnerable groups in order to improve targeting of subsidies are described in detail in a separate report⁶⁷. Once these groups have been identified, a range of options for increasing access among them include higher subsidy on nets and/or insecticide, 'nets for work' or free nets. The 'work' involved could be linked to malaria control (e.g. working on the farm of a community agent working fulltime on CBMPCP) or other health activities.

NMCC/CBoH will have to make a policy decision regarding the level of subsidy on nets, insecticide treatment and retreatment, before two of the following three options (see below) can be implemented even on a pilot basis. It is recommended that nets and the first treatment should be provided free to all pregnant women and children under five; charges may be made for retreatment when mothers bring children for immunisation.

Alternative Net Distribution mechanisms

The proposed UNICEF plan to scale up CBMPCP to 38 districts in Zambia needs to be realistic and work within existing systems, with their associated constraints. The health system is ravaged by lack of resources and of adequate numbers of skilled personnel. It is vital that the CBMPCP expansion does not further weaken or even break this system.

It might be preferable to take the net distribution mechanism out of the CBMPCP altogether, whilst retaining the community development and case management components, but this would be rather radical given the investments made in the programme to date without further exploration of options based on the existing distribution mechanism. It is therefore proposed that three alternative approaches to ITN distribution and promotion are piloted in different 'virgin' districts, two of which use the same distribution system but include a major variation. The third approach offers an entirely separate distribution system for nets, insecticide, treatment and retreatment. The three approaches should be monitored and evaluated carefully, in order to identify the most cost-effective approach to getting more widescale coverage of nets among target groups in the Zambian context.

Option 1

Same distribution system (i.e. ITNs from UNICEF to DHMTs to clinic outlets and community sales agents) but SFH/NGOs do the IEC/promotion for ITNs⁶⁸. Treatment of nets continues to be done by community agents/CHWs as close to households as

⁶⁶ Currently, the UNICEF programme targets those who can afford to buy with cash, usually men.

⁶⁷ Jayne Webster. Malaria control strategies in vulnerable populations in Zambia. UNICEF/Malaria Consortium report.

⁶⁸ This is similar to the approach planned for Kasama, with the exception that SFH plans to train clinic staff in urban centres in Kasama and this is not being proposed here.

possible. This option retains the cost recovery systems currently in place, but with improvements in financial management of the revolving fund.

Option 2

Same distribution system but remove the financial component by introducing heavily subsidised (or even free) nets to all pregnant women and U5s on producing health cards. SFH/NGOs do the IEC/promotion. Treatment of nets is undertaken at ANC and MCH clinics by community agents, and eventually by net owners at home using home treatment kits. Any revenue from sale of nets and/or insecticide is used at the facility where the money is collected (similar to the Bamako Initiative model in West Africa).

Option 3

SFH/NGOs do the procurement⁶⁹ and distribution to retail outlets or to clinic outlets (ANC, MCH) where there are no retailers, typically remote rural areas. Target groups receive free or heavily subsidised nets on showing their health cards. SFH/NGOs do the IEC/promotion. Treatment of nets is undertaken by community agents at ANC and MCH clinics or by net owners at home using home treatment kits. As above, money collected at the facilities is used to improve the facilities, decisions on use being governed by the NHCs.

These distribution options are represented in chart 4. Option 1 combines the strong IEC skills and experience of SFH with the community capacity building expertise of UNICEF/NMCC to target vulnerable groups. Option 2 removes the need for communities to sell nets or to manage finances. If some payment is to be made towards heavily subsidised nets and/or insecticide provided through ANC and MCH clinics, it is suggested the funds are used *locally* at the health facility to strengthen health services, i.e. no attempt is made to recover these funds centrally to purchase more nets. Option 3 puts the role of both procurement and distribution on SFH⁷⁰ and uses retail outlets, where they are available, as a source of nets for target groups to reduce the burden on clinics. Nets can be exchanged for vouchers or, preferably, on presentation of a valid health card (antenatal or child immunisation card), stamped by the local health centre. There is potential for abuse of voucher systems, either with forgery or with vouchers getting into the wrong hands. Nets for pregnant women and children under five should have a characteristic colour reserved only for these groups, so that they can be easily identified and traced; this will help evaluate whether new systems for targeting these groups increases net usage among them.

It is likely that clinics will remain the main outlets for nets in the near future, until more retailers get involved in net distribution in Zambia. SFH is currently attempting to supply nets and insecticide from districts to RHCs in conjunction with drugs on a monthly basis. It will be important to follow and document the progress of this approach; should it prove successful this might be replicated in the pilot districts.

⁶⁹ SFH has offered to be the procurement unit for other organisations; PSI is already providing this function in Malawi.

⁷⁰ SFH has offered to be the 'procurement unit' for nets and insecticides; PSI is already providing these services in Malawi, where the system is working well. SFH is able to get very competitive prices for both nets and insecticides (see Table 15 on cost projections).

The costs for implementing each of these options, if applied to all 23 districts targeted for expansion, are presented in table 15. The cost of each of the proposed options are within a \$25,000 range of the *planned expenditure* of the \$1 million set aside by UNICEF for malaria control in Zambia, based on the existing CBMPCP framework⁷¹. The UNICEF planned expenditure does not however provide details of the type and quantity of insecticide to be procured, but the budget allocation for insecticide appears insufficient, neither is there a budget for distribution. It is therefore possible that the total amounts for each option are even closer. It is however anticipated that options 1-3 will be much more cost effective in reaching target groups than the current strategy.

In terms of timeframe for implementation, it is proposed that the 3 options are piloted in 3 separate districts starting at the beginning of 2001 and that evaluation is planned for the end of 2001. Expansion to new districts can then take place in 2002, at the start of the new UNICEF country programme cycle, based on the findings of the evaluation. Technical assistance will be required from an economist and a malaria expert to design the projects in each pilot district, including the monitoring and evaluation component which be critical for effective evaluation.

⁷¹ The planned expenditure does not cater for the 15 existing districts, to cover the subsidy on further net and insecticide requirements, given that these districts are meeting only partial cost recovery (see section 4.1.7).

Chart 4: Distribution options for nets and insecticide

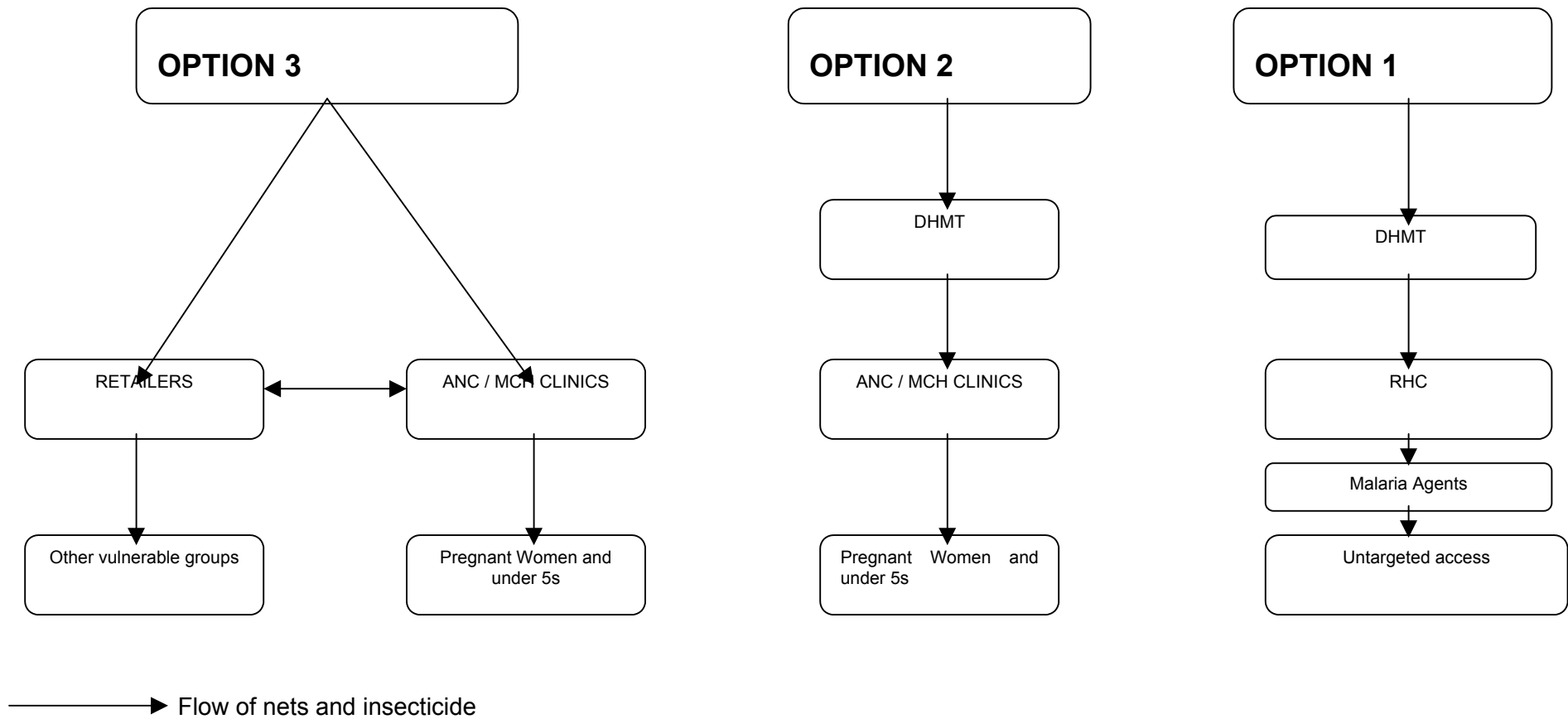


Table 15: Proposed expenditure of the \$1,000,000 set aside funds for malaria

Expansion of community-based malaria prevention and control programme to N.W., W. and N. Provinces

	Nets (100,000 units)	Retreatment kits (100,000 units)	Distribution - clinics in 28 districts	IEC	Bicycles	M & E (NMCC)	L3 Post	IMCI	CHW training	DHMT	TOTAL USD
UNICEF budget ⁷²	400,000	?19,000	?	60,000	64,000	43,000	200,000	48,000	120,000	18,000	>972,000
Option 1	400,000	?19,000	?	67,507*	64,000	43,000	200,000	48,000	120,000	18,000	>979,507
Option 2	400,000	?19,000	?	67,507*	64,000	43,000	200,000	48,000	120,000	18,000	>979,507
Option 3	290,850*	120,750*	25,375*	67,507*	64,000	43,000	200,000	48,000	120,000	18,000	997,482

*Quotation provided by SFH/PSI Zambia

All other costs are based on the UNICEF planned expenditure budget

⁷² Figures extracted from the Excel spreadsheet provided by UNICEF, drafted by Christiane Rudert. The number of nets was reduced from 107,000 to 100,000 to be consistent with the unit costs in the quotation for 'Procurement, Distribution, IEC activities for ITNS and malaria prevention in Zambia, prepared for UNICEF by SFH/PSI, Zambia, October 2000'.

Choice of insecticide

The choice of insecticide will depend on the policy decision on net treatment. If the first net treatment at ANC and MCH clinics is to be free, and the service to be provided by community agents, then perhaps cheaper insecticide in large volume containers might be logical. However, KO tabs are preferable for retreatment of individual nets by net owners, and need to be made available for retreatment until they appear in retail outlets.

Human Resources and Capacity Building

The key recommendations in the development of human resources and capacity building in the context of RBM are:

- Support the Human Resource Development and Capacity Building processes in the overall GRZ/MoH 5-year Health Plan.
- Participatory Community Development specialist based at NMCC

5.3.2 District/Community level

Planning and management

To diminish the risk of failure in districts with weak DHMTs, one suggestion is to broaden the number of partners involved at district level, in line with the principles of RBM⁷³. As suggested for the RBM strategy, the DHMTs can provide technical support for the project (with supervision and support from NMCC), but the actual coordination should be through a multisectoral 'District RBM Committee', on which the DHMT is represented but not necessarily the driving force. This is likely to be the District Development Committees, since these are already functioning. DDCs already play an important role in guiding all development projects within a district; their inclusion in the CBMPCP would ensure better coordination with other development activities going on the district, ranging from agricultural projects to women's groups.

In addition to including more partners in CBMPCP, it is necessary to review the responsibilities of actors at each level of CBMPCP in the 10 active districts. It is clear from the current review that *net sales (per se but especially in the target groups)*, *net retreatment* and *financial accounting* are the three most problematic areas in the CBMPCP. The responsibility for financial management of the community fund should be transferred to individuals in the community who have a *proven* track record for financial accountability – possibly a teacher or someone from a religious institute, possibly someone who has managed a similar account for other community development work. These individuals need to be trained and/or reoriented to the new financial management system set out in section 4.2.5 of this report. In two of the three proposed pilot districts, the need for communities to *sell nets* or *manage finances* is removed. If one of these two options turns out to be more cost effective than the existing CBMPCP approach, the financial component of training will be phased out.

Case management

It is unlikely that the health services in Zambia will improve significantly within the next 2-5 years due to reasons outlined in section 4 above. In order to improve the quality of care of malaria patients a three-pronged approach is recommended. Firstly, empower communities to seek appropriate care through community education using a network of CHWs and other

⁷³ see report by Mark Young. Support to the Zambian National Roll Back Malaria Programme. September 2000. UNICEF/Malaria Consortium.

community volunteers. Secondly, develop capacity within communities to provide basic diagnosis and treatment services for common diseases and conditions, including non complicated malaria, and to refer complicated cases to the health services, building on existing plans to train CHWs as part of community based IMCI. This will alleviate pressure on the weakened health system in addition to which communities will have access to their own supplies of essential drugs. CBoH will have to determine the range of drugs to be handled by CHWs in the light of any changes in antimalarial drug policy, and the pricing policy on drugs in addition to issues of supply and resupply. It is anticipated that actual funding of CHW drug kits will be beyond the reach of UNICEF and that CBoH will have to identify alternative sources of funding. Thirdly, continue support to IMCI for health workers (i.e. training of health workers, improved management and supervision, improved supplies and equipment etc.) so that health care skills, and therefore hopefully practices, in children under five are improved.

It is recommended that all existing malaria agents are reclassified and retrained as CHWs, and that all new CBMPCP projects train only the CHW cadre of volunteer. The role of CHWs will be very different from MAs in that the focus of their work will be in identifying and treating sick patients, and referring those who are very ill, and promoting health education messages, including the need to buy ITNs and retreat them. Options to remove the responsibility for selling nets will be explored in two of the three pilot projects.

At present, funds for IMCI activities come out of the district grant, so IMCI may not get priority in all districts, therefore there needs to be a mechanism in place for prioritising integrated CHW training and provision of drug kits.

IEC

It is essential that significant resources and time is now spent on developing an effective IEC strategy for both ITNs and home management of malaria in the existing projects and that this is evaluated before being used elsewhere. Given that UNICEF and NMCC have not been able to address the IEC component relating to ITNs adequately in the past⁷⁴ it is recommended that this component of the project be contracted out to SFH, or other NGOs with a track record for strong IEC, in the three pilot districts.

The focus of the IEC campaign should be on the need for high risk groups to purchase nets (until reasonable coverage rates are achieved) and on net retreatment. The current rate of retreatment in CBMPCP is less than 1% and the RBM target is 50% retreatment rates by 2005.

NMCC/CBoH still have a role in IEC in promoting appropriate care seeking behaviour, particularly among pregnant women and among caretakers of children. IMCI already trains health workers to provide counselling of patients; other key actors that should play an important role in IEC include CHWs, MAs, TBAs, GM agents, CBDs and other community volunteers. National IEC materials have already been developed with assistance from USAID/ZIHP; these should be used in CBMPCP districts. All malaria IEC interventions should be coordinated by the NMCC IEC officer (funded by USAID), with guidance from the national working group on IEC.

⁷⁴ See reports on the mid-term review (1996) and the evaluation (1997) of CBMPCP.

Community sensitisation

Community sensitisation for CBMPCP needs to be more participatory, beginning with identification of community felt health needs and planning interventions. USAID/ZIHP have developed a simplified guide to participatory planning and a cascade methodology to help NHCs identify their most important health problems and develop community based action plans. This methodology is currently being rolled out from the 12 ZIHP demonstration districts to the rest of the country, so that NHC plans get incorporated into RHC plans and RHC plans into district and provincial plans for malaria in 2001. Participatory approaches are also being used in community based IMCI in some countries. UNICEF needs to link with the USAID supported initiatives in participatory planning and ensure unified approaches between CBMPCP and community based IMCI.

Training (Community development/training)

As mentioned above, it is recommended that existing MAs are retrained as CHWs and that all future CBMPCP community agents are trained as CHWs. The monitoring and evaluation section(s) of the CHW training curriculum will need to be updated to incorporate the new monitoring tools outlined in section 5.2 for training in the 10 existing districts and the new pilot districts. Training in two of the pilot districts (options 2 and 3) will not however require training in financial management.

USAID/ZIHP has trained health workers (100% in some districts) and CHWs (an estimated 300 are to be trained in 2000) in 12 demonstration districts for IMCI⁷⁵. UNICEF therefore needs to coordinate with USAID/ZIHP on IMCI training for both these cadres of workers.

Malaria in pregnancy

recommendations for improved malaria interventions during pregnancy are discussed in greater detail in a separate report⁷⁶. Key elements are summarised here:

- Improved health worker recognition of the dangers of malaria and anaemia in pregnancy⁷⁷ and improved skills for treatment and prevention (chemoprophylaxis or IPT, and use of ITNs) through in-service and pre-service training
- Improved recognition of the dangers of malaria and anaemia among pregnant women and knowledge of appropriate courses (and sources) of action for treatment and prevention through targeted IEC and behaviour change activities through training existing networks of community agents (CHWs, CBDs, Mas, TBAs, mother support groups, etc.)
- Increased access to ITNs for all pregnant women either at highly subsidised rates or free (see ITNs above) – but note that ITNs alone are not likely to be effective and must be used in conjunction with chemoprophylaxis or IPT
- Integration of malaria control, HIV/AIDS control and micronutrient strategies⁷⁸ during pregnancy. Introduction of multiple micronutrient supplementation along with chemoprophylaxis or IPT, and important messages for all three public health problems into routine antenatal care services.
- Use of the Mother to Child Transmission (MTCT) initiative as a Trojan Horse for IPT in HIV+ve pregnant women.

⁷⁵ USAID/Zambia. Zambia Integrated Health Programme – Summary of support to Zambia and results 1999-2000.

⁷⁶ Jayne Webster. Malaria control strategies for vulnerable populations in Zambia. October 2000.

⁷⁷ Some health workers are not aware of the dangers of asymptomatic malaria

⁷⁸ On the basis of the findings of the UNICEF testing of a multiple micronutrient supplement in neighbouring countries.

Recommendations which target health workers can be implemented and/or strengthened within existing support to Safe Motherhood. Those which concern IEC and access to ITNs can be addressed through CBMPCP.

Nutrition

- Support the development and implementation of an objective to integrate micronutrient supplementation with malaria prevention for children as part of the RBM strategy. This could involve linking ITN promotion, sales, distribution and retreatment with micronutrient supplementation, such as periodic (six-monthly) vitamin A capsule distribution linked to ITN retreatment.
- Guidelines for the integration of multiple micronutrient supplementation (iron, zinc, vitamin A) and presumptive treatment of malaria, as well as malaria prevention (use of ITNs) for pregnant women are also needed. These need to be developed centrally through existing linkages with the nutrition group in CBoH, and then implemented through Safe Motherhood initiatives.

Human Resources and Capacity Building at district level

- The formulation and training of a District 'RBM Coordinating Committee', which could likely be the District Development Committee, in selected districts over the next year, perhaps starting with the 12 ZIHP districts.
- Provide training in participatory techniques for DDC and/or DHMT members and follow a participatory community development model for planning and implementation at the community level. Make use of the existing NGOs in the district as they often have the necessary skills and capacity in participatory community development.
- Management training for the DDH, or the chair of the DDC, whichever group is chosen to be the district RBM Coordinating body.
- Implement a process for assessment of training needs for DHMT/DDC members.
- Focus efforts on the training of community health workers in integrated health management using the community-based IMCI approach, with the provision of drug kits.

5.3.3 Summary of linkages with other UNICEF programmes

- Improved malaria control among *children* can build upon CBMPCP, IMCI (facility and community based), nutrition (GM agents) and immunisation programmes.
- Improved malaria control among *pregnant women* can build upon Safe Motherhood and MTCT initiatives.
- Improved malaria control among the *poor* can build upon initiatives targeting the poor through PWAS.

6. Acknowledgements

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