



# Lessons learned in Home Management of Malaria

Implementation research  
in four African countries

Margaret Gyapong  
Bertha Garshong

Special Programme for Research & Training  
in Tropical Diseases (TDR) sponsored by  
UNICEF/UNDP/World Bank/WHO



WHO Library Cataloguing-in-Publication Data  
Gyapong, Margaret.

Lessons learned in Home Management of Malaria: Implementation research in four African countries / Margaret Gyapong, Bertha Garshong.

1. Malaria - drug therapy. 2. Home nursing. 3. Child. 4. Home care services. - organization and administration. 5. Africa South of the Sahara. I. Garshong, Bertha. II. World Health Organization. III. UNDP/World Bank/WHO Special Programme for Research and Training in Tropical Diseases. IV. Title.

ISBN 978 92 4 159518 6

(NLM classification: WC 770)

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Printed in Italy

Design: ALIASgraphix – Switzerland – [www.aliasgraphix.ch](http://www.aliasgraphix.ch)

Cover picture: WHO/TDR/Craggs

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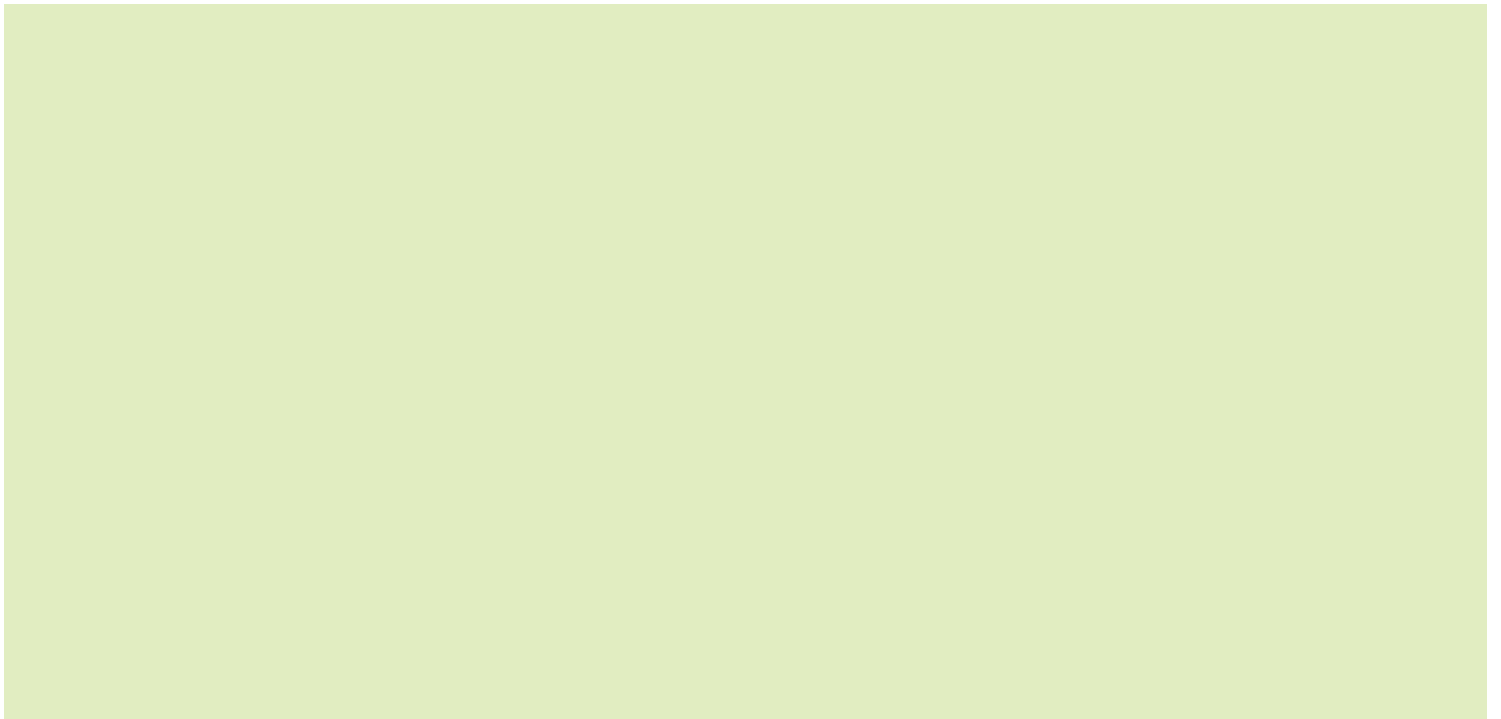
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BURKINA FASO

GHANA

NIGERIA

UGANDA



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## ACKNOWLEDGEMENTS

The contribution of the following country teams to the production of this report is greatly appreciated:

### **Burkina Faso**

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Dr Sodiomon Bienvenu Sirima, Dr Amadou T. Konaté, Mme Nathalie Convelbo, Dr Assetou I. Derme, Dr Franco Pagnoni

### **Ghana**

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Dr Edmund Nii Laryea Browne, Ms Diana Hall-Baidu, Dr Fulgence Sangber-Dery, Dr Felicia Owusu-Antwi, Mr Peter Agyei Baafour

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Dr Betty A.T. Mpeka, Dr Benon Tugume, Dr Christopher Kigongo, Dr Tom Lutalo, Ms Rosalind Lubanga, Mr Xavier Nsabagasani

The authors are grateful to the following WHO staff who contributed to the development of this document: Dr Franco Pagnoni, Dr Johannes Sommerfeld, Dr Jane Kengeya Kayondo and Dr Hashim Ghalib (WHO/TDR), and to Dr Josephine Namboze and Dr Tieman Diarra (WHO/AFRO).

## ABBREVIATIONS

<b>ACT</b>	artemisinin-based combination therapy
<b>CBA</b>	community-based agent
<b>CHW</b>	community health worker
<b>DD</b>	drug distributor
<b>DHMT</b>	District Health Management Team
<b>FGD</b>	focus group discussion
<b>FM (radio)</b>	frequency modulation
<b>FMoH</b>	Federal Ministry of Health (Nigeria)
<b>HMM</b>	home management of malaria
<b>IDI</b>	in-depth interview
<b>IEC</b>	information, education and communication
<b>IMCI</b>	Integrated Management of Childhood Illness
<b>LGA</b>	Local Government Area
<b>MoH</b>	Ministry of Health
<b>NGO</b>	nongovernmental organization
<b>PI</b>	principal investigator
<b>PPAM</b>	prepackaged antimalarial
<b>TBA</b>	traditional birth attendant
<b>VHW</b>	village health worker
<b>UNICEF</b>	United Nations Children's Fund
<b>WHO</b>	World Health Organization





# 1. INTRODUCTION

## 1.1 Sociocultural issues in malaria control

Because its roots lie deep within human communities, malaria is a unique disease (Heggenhougen, Hackethal & Vivek, 2003). Early work on malaria focused on vector control and chemoprophylaxis and was done without reference to the behaviour and belief systems of the affected populations. Too often, behavioural and sociocultural involvement in research came as an afterthought: it is well known now that neglect of sociocultural factors contributed significantly to the failure of earlier malaria control efforts. Inadequate investment in communities meant that they could not hold on to preventive programmes, and governments felt they lacked the resources to continue providing the means for vector control. However, the challenge for any malaria control strategy is the effective development, implementation and sustaining of appropriate interventions and “Only in retrospect has it become fully clear that the failure of malaria eradication was in large part a failure to look at the social and organisational levels. This can be achieved only through a cross-disciplinary approach – integral to which is a sociobehavioural dimension and social science perspective” (Wessin, 1986).

A different approach was taken in the 1970s, with the malaria scourge being tackled through sociocultural and behavioural research (Jones & Williams, 2004). Inhorn & Brown (1997) classify this period as the “boom” time for research, with more anthropological work than ever before on infectious diseases – probably because of the growing recognition of the importance of the discipline in the conduct of health research. The early 1990s saw an increase in the number of malaria studies that focused on local terms, perceptions of disease causation, treatment-seeking behaviour, prescriber behaviour, and preventive measures such as the use of bednets (Agyepong, 1992;

Aikins, Pickering & Greenwood, 1994; Mwenesi, Harpham & Snow, 1995; Gyapong et al., 1996; Binka & Adongo, 1997; Muela Haussman, Ribera & Tanner, 1998). These studies went on to inform large-scale trials, which in turn informed policy formulation and programme implementation at country level. In Ghana, for instance, this was a period of reform in the health sector, with searching questions being asked by the National Malaria Control Programme, including:

- > Can improved communication with clients and proper labelling of drugs improve adherence to therapy?  
(Agyepong et al., 2002)
- > Can prepackaging improve adherence and reduce polypharmacy?  
(Yeboah Antwi et al., 2001)
- > Which is the preferred option for managing malaria in children, tablets or syrups?  
(Ansah et al., 2001)
- > Can use of treated nets reduce malaria morbidity and mortality?  
(Binka et al., 1996)
- > Can mothers/caregivers manage fevers at home?  
(Browne et al., 2001<sup>1</sup>)
- > If schoolteachers are taught to treat malaria, can absenteeism be reduced?  
(Afenyadu et al., 2005)

The use of social science methods to address these critical issues – overlooked for so long – provided the Programme with the evidence it needed to put together its first-ever strategic plan.

<sup>1</sup> BROWNE ENL ET AL. (2001). EARLY APPROPRIATE HOME MANAGEMENT OF FEVERS IN CHILDREN AGED 6 MONTHS TO 6 YEARS IN GHANA (UNPUBLISHED REPORT).

## 1.2 Background and rationale

Studies on treatment-seeking behaviour have shown that most malaria episodes are first treated at home using shop-bought drugs (Foster, 1991; Agyepong, 1992; Snow et al., 1992; Mwenesi, Harpham & Snow, 1995). Part of the reason for this is poor access to, and the perceived poor performance of, the formal health services (Foster, 1995; McCombie, 1996). These treatments are usually incorrect or suboptimal (Agyepong, 1992; Slutsker et al., 1994). Since the majority of children who die from malaria do so within 48 hours of onset of illness, the early use of effective antimalaria medicines close to the home can help to reduce the burden of the disease in sub-Saharan Africa (WHO, 2005) and minimize the life-threatening consequences of treatment delays.

08 Improving child survival required investment in approaches that empower the rural poor, giving them the tools to recognize the signs and symptoms of malaria and to take prompt and appropriate action – thereby preventing death. Presumptive treatment of malaria has remained the one affordable option for ensuring prompt and effective treatment at community level. Over the past several years, WHO/TDR has funded several studies on home management of malaria (HMM) with the intention of developing a strategy to increase access to effective antimalarial treatment close to the home, thereby addressing the failure of the formal health system in many endemic countries to deliver effective treatment promptly to those in need.

As part of those studies, all research teams developed an intervention designed to expand the coverage of effective malaria treatment to reach children at home by empowering caregivers in the communities. The intervention package included training of both health staff and community members, a campaign for behavioural change, and the production and distribution of

user-friendly, prepackaged antimalaria drugs at the community level. The key expected outcome of the intervention was an increase of at least 50% in the proportion of preschool children (6–60 months) with uncomplicated fevers who received appropriate treatment at home within 24 hours of onset. Study results have shown that appropriate prepackaged drugs, carefully selected and trained drug distributors and a well-presented information, education and communication (IEC) package can bring about a significant increase in prompt and appropriate treatment for childhood malaria reduce the evolution of uncomplicated malaria to severe disease.

As a result of these studies, HMM has become a cornerstone of malaria case-management and, more generally, of malaria control in sub-Saharan Africa. Many countries have incorporated HMM in their strategic plans to roll back malaria, or in their successful applications to the Global Fund to fight AIDS, Tuberculosis and Malaria, and are now moving to large-scale implementation of HMM. Moreover, HMM fits in ideally with the commitment made by African heads of state at the Roll Back Malaria summit in Abuja (April 2000) to ensure that, by 2005, 60% of malaria episodes are appropriately treated within 24 hours of onset of symptoms. This commitment recognized the need to provide good-quality drugs as close to the home as possible by empowering communities – especially those caring for children – to recognize and treat malaria.

This guide focuses in particular on four countries – Burkina Faso, Ghana, Nigeria and Uganda (*see Figure 1*) – where country teams have completed community-based studies on HMM, assessing its operational feasibility, acceptability and (in Burkina Faso) impact on severe disease. All country teams have submitted final

reports to TDR, and some have published their findings in scientific journals and made presentations at national and international level. Summaries of the studies are given in Annexes 1–4. These reports and publications have focused mainly on results, without documenting in depth the implementation process. Now that many countries are moving towards implementation of large-scale HMM programmes, there is a need to document the large body of experience that has been gathered during the work already done and to make this information available to malaria control programmes in endemic countries.

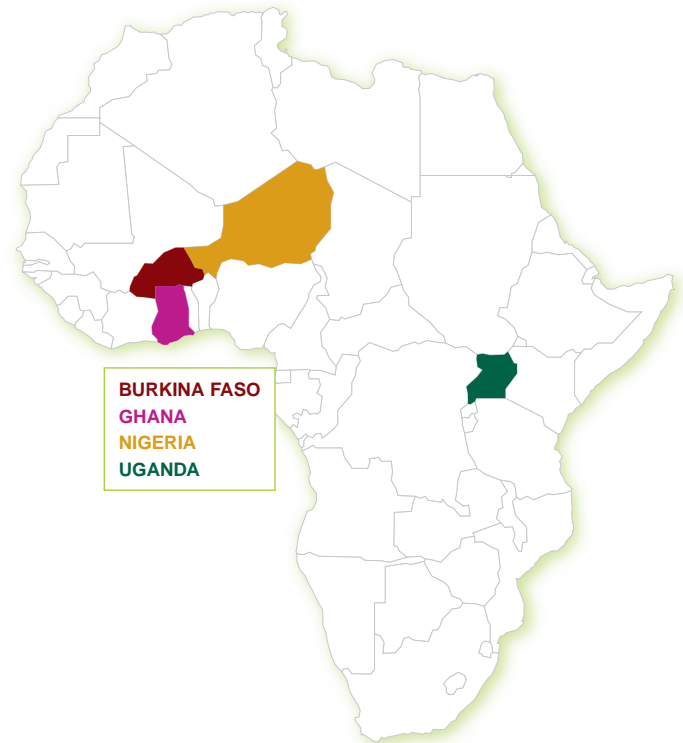
The document is a comparative analysis and documentation of the processes that have enabled teams to implement HMM in various settings. It complements other WHO publications on the subject (WHO, 2004, 2005) in that it focuses on the processes, challenges, and lessons learnt in implementing the HMM strategy in the four African countries. It offers an insight for all those who may be involved in implementing HMM strategies, especially malaria control programme officers in endemic African countries. The processes outlined in the document should not be regarded as prescriptive: they may be adapted to suit particular situations.

It should be noted that, at the time the reported studies were conducted, chloroquine was the first-line drug of choice in all four countries. Since then, the diminishing effectiveness of chloroquine has led many countries to adopt artemisinin-based combination therapy (ACT) as first-line treatment for malaria. ACT is currently recommended for use at the health facility level in most countries, and its use at the community level, possibly as part of an HMM programme, is being considered (Charlwood, 2004; D'Alessandro, Talisuma & Boelaert, 2005; Pagnoni et al., 2005). While some of the implementation processes described here, which relate to HMM with chloroquine, cannot be directly transferred to HMM with another drug, most of the

lessons learnt with chloroquine will be highly relevant to an HMM programme using ACT, provided that certain adaptations are made. In fact, the HMM strategy should be regarded as a framework, with a set of well-defined core implementation principles that apply regardless of the drug being used.

*Figure 1.*

MAP OF AFRICA SHOWING STUDY SITES



### 1.3 Study sites

#### **BURKINA FASO**

**The results of an earlier qualitative study conducted** in Burkina Faso were used to design the intervention implemented in Boulgou, one of the country's 45 provinces, which is located in the south-east and borders Ghana and Togo. Boulgou covers an area of 6992 km<sup>2</sup> and has an estimated population of 415 414, some 75 000 of whom are children under 5 years of age. Like the rest of the country, the region is mainly agricultural. The province has 13 administrative departments, 1 town, and 389 villages, and most of the population speak the local language, Bissa. Malaria is hyperendemic in the province.

#### **GHANA**

**For the purposes of the intervention, Ghana was** divided into three main ecological zones, coastal, forest and northern savannah belt. One district was selected from each of the ecological zones – Gomoa in the coastal zone, Ejisu Juaben in the forest belt, and Wa in the northern savannah. This ensured that all epidemiological strata were included, as well as the biting habits of the different *Anopheles* species. In addition, the three districts have different levels of poverty because of their different terrain, rural population densities, and barriers to accessibility. The total population of the three districts was 445 996. The villages within the districts were selected on the basis of their poor access to, and use of, health services compared with other areas in the same districts: most of them are inaccessible to static and outreach services because of distance, poor road networks, and natural barriers such as rivers, valleys, and hills. In all, 40 study villages were selected.

#### **NIGERIA**

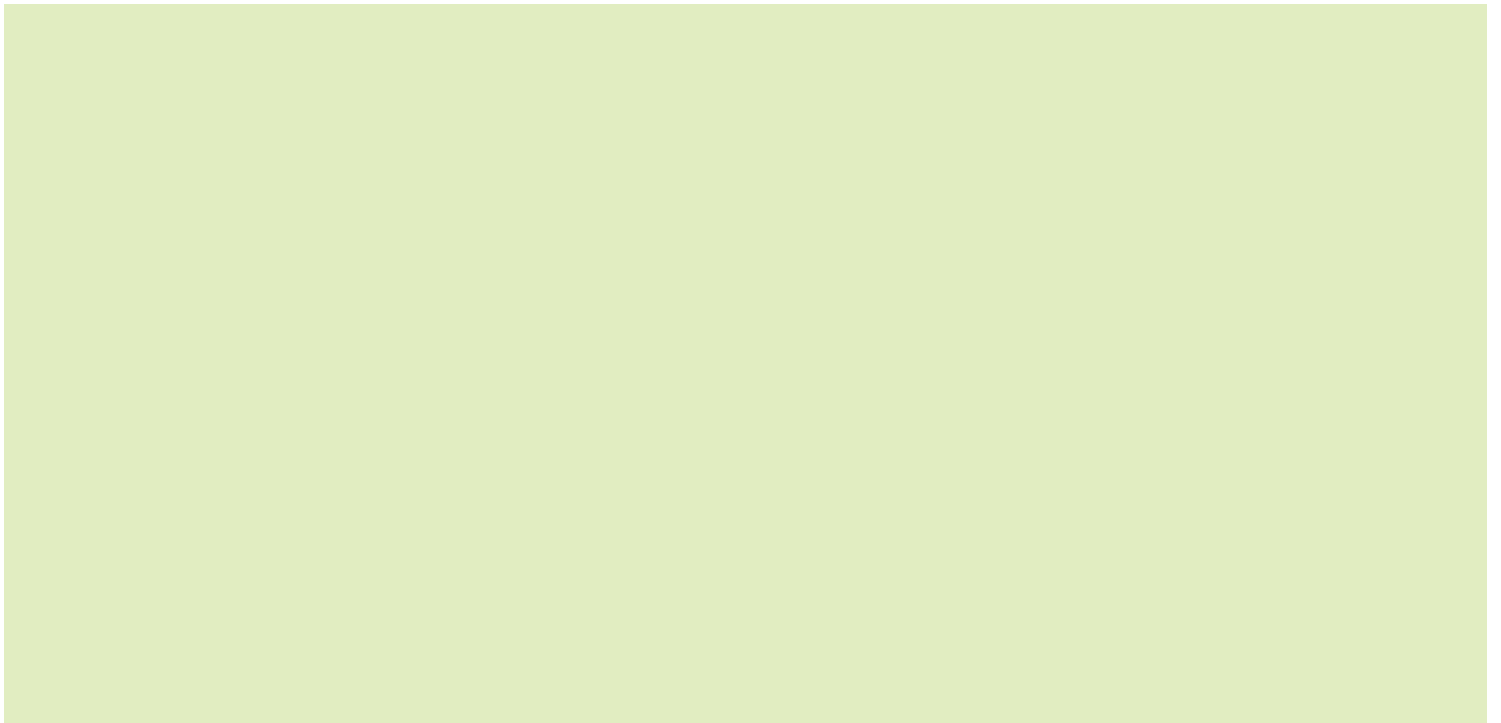
**Three communities were selected, each in a different** state and each with a population of approximately 10 000. The locations were Ibarapa Central Local

Government Area (LGA) in Oyo State in south-western Nigeria, and Isuikwuato LGA in Abia State and Igbo Etiti LGA in Enugu State, both in the south-east of the country. Although the states of Abia and Enugu are in the same political zone, they have quite different geographical characteristics: Isuikwuato LGA is in the forest zone, whereas Igbo Etiti LGA is in a forest–savannah mosaic zone. This geographical difference is reflected in certain behavioural differences in the people. The chosen site in Ibarapa Central LGA was the town of Idere and its surrounding farm hamlets. Its population of 9740 residents included 1922 (19.7%) children aged 6 years or younger. The recorded population of the autonomous community of Ukehe in Igbo Etiti LGA was 8738, of whom 2060 (23.6%) were 6 years of age or less. The autonomous community of Mbaugwu in Isuikwuato LGA had a population of 8081, of whom 1508 (18.7%) were children in the project age group.

#### **UGANDA**

**The intervention was conducted in rural populations** of three districts in Uganda – Masaka, Mpigi, and Mubende. About 89% of the population of these districts live in rural areas. The estimated total population of the study communities was 110 659, with 20 548 children under 5 years of age. Average family size was 4–6 people, average annual population growth rate was 2.8%, and children under 5 made up 19% of the total population (1991 census). The populations of these districts are homogeneous, belonging to the Bantu tribal grouping. Because they speak similar dialects and can understand each other, a single local language (Luganda) was used for IEC purposes. These rural populations were selected because they have medium malaria transmission, are underserved with health services, and are representative of most of the country's population. The target populations for the study were children aged 6–60 months, mothers/caregivers, fathers, and health care providers, including drug sellers.





## 2. KEY STEPS IN THE IMPLEMENTATION OF HOME MANAGEMENT OF MALARIA

Two social scientists from Ghana were hired to develop a work plan for the initiative and to examine the reports with regard to aspects related to social sciences and the implementation process in the four countries. A first consultative meeting was held with principal investigators (PIs) and social sciences researchers in the four country teams to share experiences of the processes, challenges, and lessons learnt – and attempts to address the challenges. The teams were divided into two groups, each of contained a representative from each of the four countries and looked at different aspects of the implementation processes.

### Group 1 looked at:

- » community entry and sharing of information with stakeholders
- » design and execution of IEC
- » monitoring of activities
- » imperatives for scaling up.

### Group 2 looked at:

- » selection and training of distributors
- » preparation of training manuals
- » production of prepacks
- » imperatives for scaling up

After the first draft report had been put together, two countries – Burkina Faso and Ghana – were visited to fill in the gaps identified in the collation of the reports and during the first consultative meeting (held in Ghana). E-mail communications with Nigeria and Uganda were also used to fill in gaps that had been identified. An in-depth analysis of processes was undertaken by the two social scientists and the second draft report on implementation guidelines was put together: this draft was reviewed and finalized at a final consultative meeting of PIs from the four sites, held in Geneva.

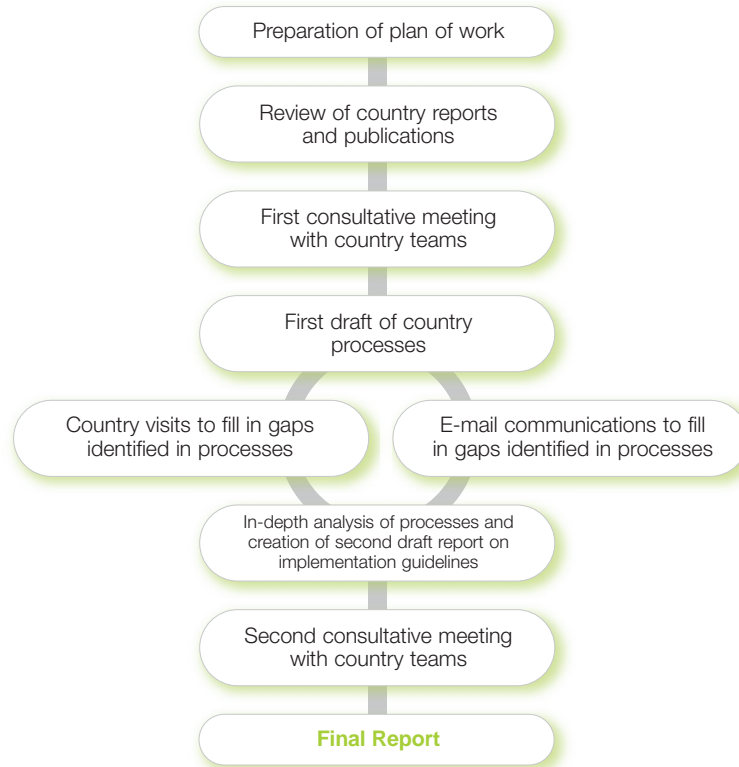
*See Figure 2.*

Implementation of an HMM programme requires detailed planning of a number of steps. These are clearly outlined in the handbook *Scaling up of home-based management of malaria: from research to implementation* (WHO, 2004) and include:

- » setting core objectives
- » conducting a situation analysis
- » establishing a core working group
- » advocacy
- » building partnerships and defining roles
- » implementing the strategy
- » drug procurement and storage
- » module development and training
- » monitoring and evaluation.

Figure 2.

PROCESSES OF ANALYSIS



All four countries went through a similar process of step identification, with only the slight variations shown in *Figure 3*. They undertook the following three principal sets of activities during the implementation of HMM projects:

- > Pre-intervention activities
- > Main intervention activities
- > Monitoring and evaluation

The *pre-intervention* phase involved five main steps:

- » establishing a core working group
- » setting core objectives

- » entering a community and consulting stakeholders
- » conducting a situation analysis
- » selecting drug distributors.

Four steps were involved in the *main intervention*:

- » drug procurement and supply
- » preparation of training manuals and training of key implementers
- » development and execution of IEC strategies
- » dispensing and use of prepacks at community level.



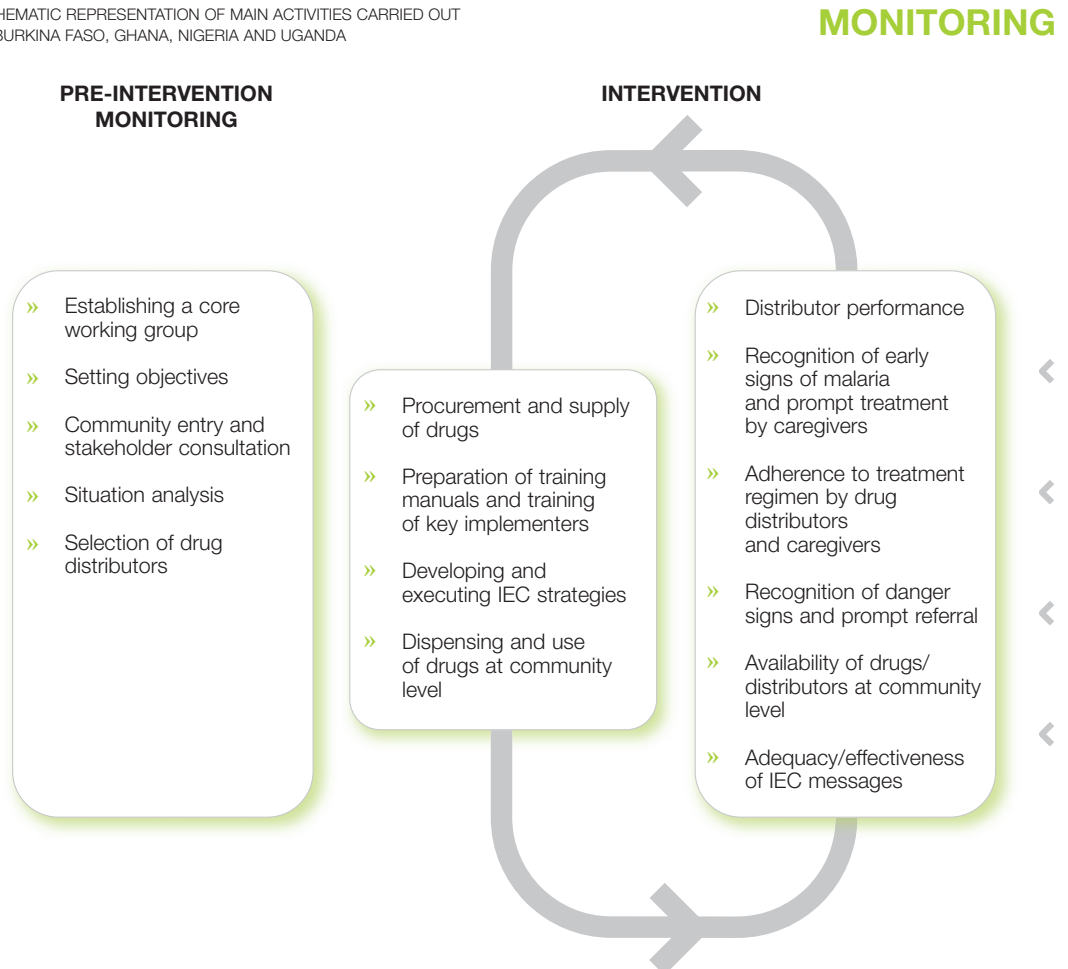
During the intervention, six key areas were *monitored*:

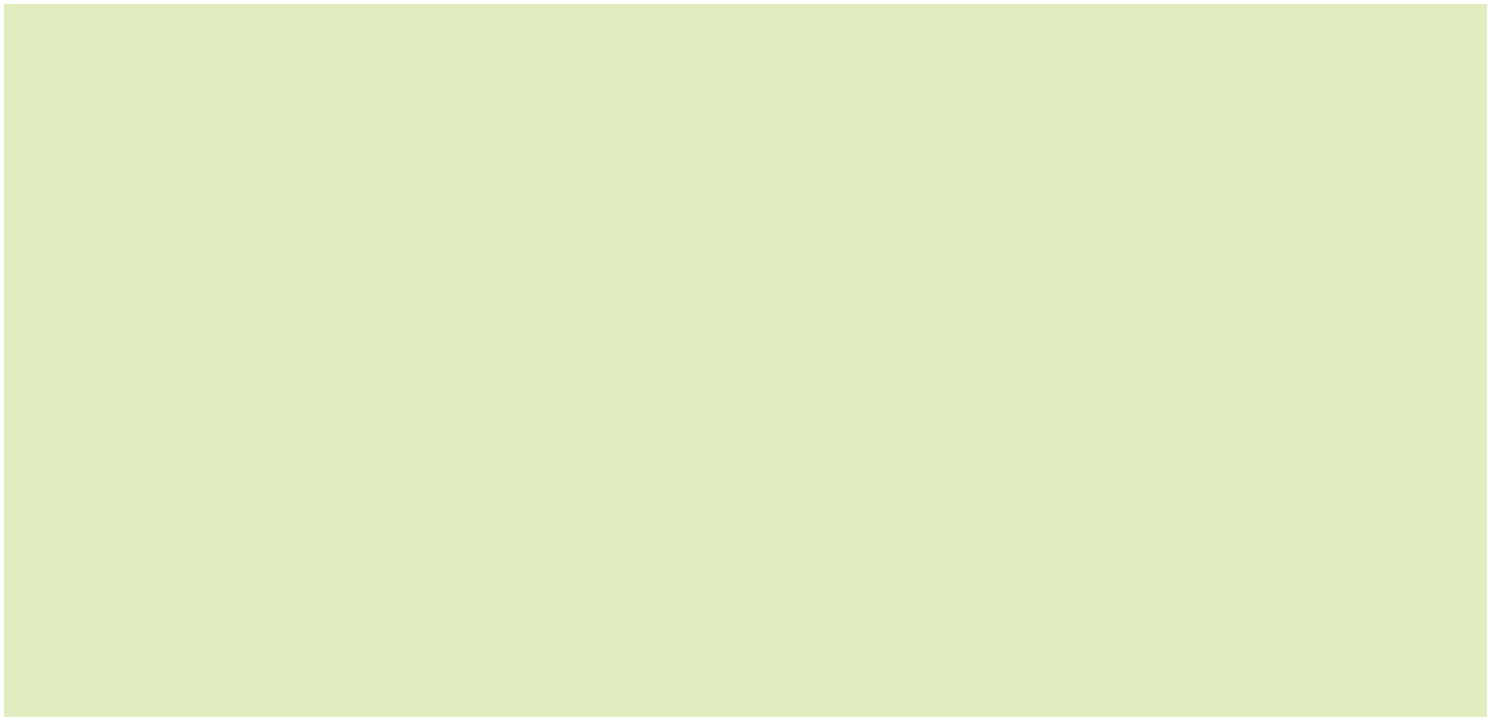
- » distributor performance
- » recognition of early signs and prompt treatment by caregivers
- » adherence to treatment regimen by caregivers
- » recognition of danger signs and prompt referral
- » availability of drugs/distributors at community level
- » effectiveness/adequacy of IEC messages.

Subsequent sections of this publication explain in detail each of the steps and activities involved in implementation of the HMM projects by the four countries. Each section begins with the rationale for the activities in the step, continues with a description of the implementation process in each country, and ends with a summary of the challenges faced and the lessons that can be learnt from the countries' experiences.

*Figure 3.*

SCHEMATIC REPRESENTATION OF MAIN ACTIVITIES CARRIED OUT IN BURKINA FASO, GHANA, NIGERIA AND UGANDA





### 3. PRE-INTERVENTION ACTIVITIES

A number of activities were carried out in advance of the main intervention to assist teams to understand the situation prevailing in the district where the work was to be done. The five main steps of the pre-intervention phase were:

1. Establishing a core working group
2. Setting core objectives
3. Entering a community and consulting with stakeholders
4. Conducting a situation analysis
5. Selecting drug distributors.

#### 3.1 Step 1: Establishing a core working group

Implementing HMM is a huge task and requires the total commitment of all stakeholders. It would be almost impossible for one programme single-handedly to address all the issues involved in implementation: a core working group or team that included all stakeholders was found to be useful in terms of advocacy, planning, and implementation. This core group should have strong links with key ministry of health (MoH) departments – IMCI (Integrated Management of Childhood Illness), drug regulatory authorities, pharmaceuticals, health education and promotion, etc. The composition and activities of the groups put together in the four countries are described below. Each group met regularly to discuss aspects of the HMM projects.

## BURKINA FASO

**In Burkina Faso, the core team was composed largely** of members of the research team. It also included the manager of the malaria control programme, who was not directly involved in day-to-day activities but regularly sat with the research team to review progress. His presence on the research team also ensured that the MoH was fully aware of the importance of prepackaging of drugs and the use of the HMM strategy.

## GHANA

**The team put together in Ghana met twice a year** to discuss strategy, field operations, constraints, and challenges and to review progress reports and the situation on the ground. These regular review meetings also discussed the implications of research findings; translation of these findings into policy and programmes was facilitated by the composition of the team, which included:

- » representatives from universities (community health, child health);
- » representatives from other research institutions (including epidemiologists) and from the unit within MoH charged with research in support of policy-making;
- » policy-level MoH personnel (Deputy Director-General, Head of Public Health);
- » programme-level personnel (from health education and the national drugs programme), including the malaria control programme manager and the IMCI head;
- » operational-level personnel (the District Directors of the three study districts were joint PIs);
- » development partners (UNICEF, WHO, nongovernmental organizations).

## NIGERIA

**In Nigeria, the core group – the Technical Advisory Group** – had a mainly advisory role, using feedback from the research team to advise the Federal Ministry of Health (FMoH) on the use of research results and their integration into other health programmes. The team comprised:

- » a university professor in charge of the WHO Collaborating Centre for Malaria and the Director-General of the Nigerian Medical Research Institute who was also the coordinating PI for the study;
- » the coordinator of the National Malaria Control Programme of FMoH;
- » the director of the Primary Health Care and Disease Control Programme of FMoH;
- » the director of WHO's disease control programme in Nigeria (or her representative);
- » a representative of a nongovernmental organization (NGO) working in health.

## UGANDA

**The core working group in Uganda was the central** research team. However, at each level of HMM implementation there was also a team that ensured the smooth running of activities. These teams included the District Directors of Health Services in the three study districts and the Local Council V chairmen. The Ugandan team was unique in that the PI was a Commissioner of Health and thus able to secure the participation of key MoH personnel, such as the District Commissioner and Secretary of Health at the local council level, in regular meetings to assess progress and advise on the way forward.

## 3.2 Step 2: Setting core objectives

The objectives of a project closely reflect the problem under investigation and summarize what the project is designed to achieve. Objectives are important to help keep the project in focus, to assist the core working group in collecting relevant information, and to ensure that organization of the project proceeds in clearly defined phases. They should specify what will be done, where, and for what purpose (Varkewisser, Padmanathan & Brownlee, 2003).

The projects in Burkina Faso, Ghana, Nigeria and Uganda shared the following core objectives:

### Primary objective

- > To develop and test a package of interventions for early and appropriate home management of fevers in children aged 6 months to 6 years.

### Specific objectives

- > To assess the operational feasibility of interventions for delivery of prepackaged drugs and IEC activities to households and communities.
- > To assess whether bringing IEC activities and prepackaged drugs closer to where people live improves the compliance of mothers/caregivers with treatment for childhood fevers.
- > To assess the community attitude towards, and response to, prepackaged antimalarial drugs.
- > To determine whether introduction of an intervention package in a community increases the percentage of children who receive early (within 24 hours of onset of symptoms) and appropriate treatment for febrile illness.

The Burkina Faso team added the following research objective, based on its previous experience with research on HMM:

- > To measure the effect of home use of the currently available prepackaged antimalarial (PPAM) drugs on the evolution of uncomplicated fever episodes to severe malaria cases.

## 3.3 Step 3: Entering a community and consulting with stakeholders

### ENTERING A COMMUNITY

Different people have different ways of defining a community. Agueldo CA (1983) defines a community as a group of people living in a particular area and sharing similar values and cultural patterns. According to Chand (1989), a community is made up of different groups living in a particular area, and Heggenhougen, Hackethal & Vivek (2003) define it as dynamic social units within a defined area. Whatever the definition, communities include people – as single units or different groups – who live in a defined area and have particular ways of life. The success or failure of health interventions introduced into communities throughout the world depends to a large extent on the level of involvement of community members in the implementation processes. Seen in this light, it becomes clear that entry into a community is one of the most important factors in determining whether that community is going to become involved in, and committed to, a given intervention.

Twumasi (2001) noted that, “When a person enters a village (or for that matter a community), people begin to wonder about that person’s mission. The gossip starts and interpretation and reinterpretation of the situation begin.” It is precisely because of the potential for misinformation that communities must be entered properly. The approach may be formal or informal, but the aim is to consult appropriate representatives of the selected

community or communities, *before* any work begins, to ascertain whether the questions to be addressed by the proposed study are considered relevant – and thus whether the study will be accepted (Smith & Morrow, 1996). This activity is important if community leaders, and subsequently the general population, are to cooperate in whatever activities are planned.

### **STAKEHOLDER CONSULTATIONS**

A stakeholder is anyone whose involvement is crucial to the success of an activity – in this case, the HMM strategy. Getting stakeholders interested in an activity involves exhaustive face-to-face consultations and discussions from the national level through to the community level – not just briefing the stakeholders and seeking their approval for the study, but actively involving them in the various discussions and negotiations.

The key stakeholders in the HMM strategy include (but are not limited to) the following categories of people at the national, regional, district and community level:

#### *POLICY-MAKERS AND POLITICAL LEADERS*

Policy-makers and political leaders would ensure that health workers and end-users of the HMM strategy were kept fully informed of any shift in policy and convinced of the value of giving a drug in a new way.

#### *DRUG COMPANIES*

Any decision on drug use could have serious financial implications for drug companies in terms of changes in their production lines and the need to purchase new equipment for the manufacture, packaging and labelling of drugs – making it critical that drug companies are assured of a market for the new product.

#### *HEALTH CARE PROVIDERS AT FACILITY AND COMMUNITY LEVEL*

Health care providers at health facility level have been used to providing care to people who come to them; they will need time to adjust to the idea that caregivers in the home can also provide appropriate treatment. They will also need to learn not to castigate mothers/caregivers who indicate that they started treatment of sick children at home before coming to the health facility.

Health care providers at community level include herbalists, drug peddlers, sellers of patent drugs or chemicals, and traditional birth attendants (TBAs). They are the first point of call in times of ill health, competitors who already have a special relationship with the community, who may have aggressive marketing skills, and who at times allow clients to buy drugs according to what they can afford at the time (which may be less than the full dose) or on credit. They also have a demonstrated capacity to serve the remoter parts of the community, and the potential to promote a new product – or to discredit it if it is seen as a threat to their business.

#### *COMMUNITY MEMBERS*

Because the community is the level at which the drugs will be dispensed, community members are key stakeholders. Moreover, if the intervention is discredited by any person or group of people, it may not succeed. To ensure maximum support, consultations and negotiations at the community level should cut across all social, political and religious groupings. Consultation should not be a “one-off” activity: constant interaction with the communities in which the projects were implemented contributed to the success of the projects and enabled community members to share their concerns with the study teams.



**CONSTANT INTERACTION WITH COMMUNITY MEMBERS IS VITAL**

Communities in the four countries were approached either through community durbars or through meetings with community elders. The rationale for the studies and the role of each community in the intervention were explained. After the initial contact, research team members returned to consult community members whenever the need arose. This constant interaction contributed to the success of the programmes and enabled community members to share their concerns with the core working teams.

**MEDIA**

Consulting with the mass media is crucial: with their capacity for communicating any message, they can make or break the use of a new product on the market.

## BURKINA FASO

**The core team started their consultations by seeking approval for implementation of the project from the MoH.** Meetings with regional health authorities followed, at which the core team explained the objectives and design of the project and obtained permission to proceed to district level. At the district level the core team met with the District Health Management Team (DHMT) and explained the objectives and methodology of the project. They ensured that the DHMT – who would be the implementers of the project – were trained as trainers; they also entered the various communities identified for the intervention and, through sensitization meetings and discussions with community elders, presented the idea of the project to members of the selected communities. Once the concepts and procedures were understood, the core team and the DHMT were able to proceed with their work.

There was no detailed negotiation with any drug company, but discussions were held with staff of public health facilities and community health workers (CHWs) to explain the need for prepackaging of drugs – which, until then, had not been part of the normal procedure for dispensing drugs. In accordance with the policy of the Bamako Initiative, which is implemented throughout the country, all health centres in the Boulgou province maintain an essential drug store. In June 1998, they received – free of charge – a first stock of chloroquine, labels, and plastic bags to initiate the project. The drugs were prepackaged locally by the drug store managers and delivered, again free of charge, to the CHWs of the villages concerned.

## GHANA

**In Ghana, negotiations began at the national level (MoH) and continued to regional and then district level.** The core research team initiated the formation of a technical committee and ensured that there were regular progress meetings between the two. Permission granted at regional level gave the core team the mandate to enter the districts where the work was to be done. Consultations at

the district level were the most intense: the District Directors of Health were made co-investigators of the overall project and acted as the representatives of the PI in their respective districts.

The DHMT guided the implementation process, securing the involvement of sub-district teams through sensitization meetings and agreement on roles during the project. Together, the DHMT and the sub-district teams led the core team into the project communities, identifying for them the various community leaders. The rationale for the project was explained and the consent of the leaders was sought for the work to go ahead. Later, the community leaders organized meetings at which, in the presence of the core team, they explained the research objectives to members of the community. Community members were then allowed to ask questions. Some of the meetings – for which advance notice was always given – were held in churches with various religious groups, some in the market places on market days, and some in the fishing communities on their rest days.

The research team approached several local drug manufacturers but found that they were unwilling to risk investment in a small project with no guarantee that the results would be used nationwide. However, after much deliberation and discussions involving the manager of the National Malaria Control Programme, one local company agreed to produce all the prepackaged drugs: the project paid only for the aluminium foil used (US\$ 9000). The company is currently prepackaging antimalaria tablets for all age groups on a large scale and advertising in the media at its own cost.

The core team, with assistance from the DHMT and community leaders, identified and met with the non-formal community-level health providers to seek their input and support in achieving the project's objectives. This group included spiritualists, peddlers, herbalists and sellers of chemicals.



## NIGERIA

**The core team met with staff of the State MoH to present the project to the Government.** Letters of introduction to senior primary health care personnel and policy-makers of the LGAs were obtained, and the support of these officials was secured at subsequent meetings. The research team was introduced to community leaders by primary health personnel, holding meetings to explain the purpose of the research and solicit support. Having approved the project, community leaders disseminated information to their communities through ward leaders and town criers. Dates were fixed for meetings at which the research team explained the objectives of the project to community members, encouraging them to ask questions and seek clarification of any points that were unclear.

In negotiations with the non-formal health care providers, the high cost of the drugs for the project (compared with their cost on the open market) proved to be a stumbling block. Drug sellers in particular felt that selling the more expensive project drugs would jeopardize their business. Eventually, the research team was able to reduce the cost of project drugs and reach a favourable agreement with the drug sellers.

## UGANDA

**In Uganda, the core team began by meeting with officials of the MoH to solicit support and ensure that there would be financial backing for the project.** Since the PI was employed by the MoH, it was also necessary to persuade the authorities to grant her the time for the project. District political leaders and health teams were then visited; the objectives of the project were explained to them and the roles of the various stakeholders were defined and discussed in an effort to ensure full participation. With support at the district level secured, the core team introduced the project to sub-county and village level, ensuring that the fullest possible use would be made of the structures existing at these levels. Community lead-

ers cooperated with the health teams in selecting the sub-counties that would be involved in the main intervention. *See Figure 4.*

Community leaders were asked to inform their communities about the project, seeking their consent and cooperation in uptake of the interventions; they were also responsible for guiding the selection of suitable individuals as sub-county coordinators and parish supervisors for the project, and as drug distributors (DDs).

After a number of discussions and negotiations, a local pharmaceutical company – Kampala Pharmaceutical Industry – was contracted to pack the drugs and label them appropriately for the intervention. Negotiating with existing health care providers in Uganda proved to be difficult: private clinics and drug shop owners discredited the intervention, regarding it as competition. The project team, community leaders and DDs were obliged to undertake intensive IEC campaigns to dispel false rumours that were spread about the efficacy of the cheap drugs available through the project.

### CHALLENGES AND LESSONS LEARNT

In general, two principal factors contributed to the acceptability of the projects. One was the community entry process: involving key figures from all social, political, and religious groups was critical, as was using community leaders and other influential individuals to introduce the core teams to the people of the various communities. The second was the sustained and interactive nature of consultation and negotiation with stakeholders.

The fact that a single meeting was often insufficient to explain the aims and objectives of the project proved to be a substantial challenge. Even during the intervention itself and the monitoring of activities, core teams often had to go back to key stakeholders to clarify certain issues or resolve problems – notably with existing drug vendors who tried to oppose the idea of community-based agents (CBAs).

Figure 4.

INTRODUCING THE PROJECT TO DISTRICT LEADERS  
AND COMMUNITY MEMBERS IN UGANDA



### 3.4 Step 4: Conducting a situation analysis

Before scaling up of HMM is implemented, one of the most important activities that should be undertaken is a situation analysis – of health-seeking behaviour and access to antimalarial treatment (WHO, 2004). The information gathered is used as a baseline against which the core team can assess the progress made during the intervention.

Formative research carried out in the four countries used mainly qualitative data collection techniques and tools to gather the information needed to put the various interventions in place. According to Nichter (1984) the five aims of formative research are:

- » to inform those developing the interventions of what the local people are doing, thinking and saying about focal issues, behaviours and the like;
- » to provide baseline data on how services are viewed;
- » to investigate motivations and opportunities for change as well as resource-related and other constraints;
- » to provide information on how best to implement an intervention (who? when? how?);
- » to monitor the community response to an intervention over time.

The situation analysis relied principally on qualitative methods – implying an emphasis on processes and meanings that are not rigorously examined or measured in terms of quantity, intensity or frequency – that seek answers to questions about how social experiences are created and given meaning. Information gathered in these initial studies was used to design structured questionnaires. The methods used included focus group discussions (Merton, Fiske & Kendall, 1990; Stewart & Shamdasani, 1990), key informant interviews (Spradley, 1979), observations (Spradley, 1980), case studies, community mapping and morbidity surveys. The information gathered assisted with:

- » developing a better understanding of community processes and community perception of the use of prepacks for treating fevers in children;
- » documenting community concepts of ill health and perception of malaria treatment-seeking behaviour;
- » identification of channels for communicating health information;
- » design of IEC materials and methods;
- » identification of DDS;
- » documenting sources of care for children under 5 years of age;
- » documenting sources of care that were potential channels for distribution of prepacks;
- » documenting drug names, design of prepacks for different age groups, nature of packaging, cost, etc.

#### **BURKINA FASO**

**The situation analysis undertaken in Burkina Faso** did not need to be particularly detailed: extensive information on the study area was already available from earlier ethnographic work (Pagnoni et al., 1997). Non-medical individuals who were not part of the planned intervention (mainly local schoolteachers) were employed to conduct household surveys in the 32 selected villages; the surveys took place towards the end of the high transmission season, in October 1998 and October 1999. Survey personnel visited all households that included children under 5 years of age. A standardized questionnaire was administered to every mother or caregiver with a child who had had uncomplicated or complicated malaria (according to the study definition) during the previous 30 days. The child's personal details, the socioeconomic status of the family, the occurrence of "hot body" or "bird disease" (convulsions), when the use of prepackaged treatment units began, and the appropriateness of the treatment (dose for age, duration) were noted.

The situation analysis also determined from the communities whether the volunteers from the Bamako Initiative were still in place. Where there were no volunteers, the core team discussed the objectives of the intervention with the communities and explained the need for volunteers to assist in the distribution of drugs at community level.

#### **GHANA**

**In Ghana, the analysis was designed to explore** mothers' and carers' definitions of malaria and health-seeking behaviour, sources of health information, sources of care, management of fevers in the home (including use of medicines to treat fevers), and potential distributors of the prepacks during the intervention phase. The aim was to gather information to assist the core team in developing a package of interventions for home management of childhood fevers.

Both qualitative and quantitative research made use of focus group discussions (FGDs), in-depth interviews (IDIs), case studies, observations, and a field survey. FGDs were held with young mothers (under 25 years) and older mothers (over 25 years), adult males, and opinion leaders in the proposed intervention communities. In each study area, 500 mothers/carers were also interviewed; assemblymen and Unit Committee members assisted by selecting respondents for FGDs, IDIs, and case studies for their ability to provide the necessary information. Case studies also covered mothers of children who had had a fever in the previous two weeks, and a verbal autopsy questionnaire was administered to mothers/carers whose children had died within the previous two years.

#### **NIGERIA**

**The qualitative procedures used in Nigeria included** FGDs and IDIs with key informants; FGDs involved both men and women who were classified as either parents or grandparents. Three FGDs out of the four cate-

gories (female parents, male parents, female grandparents, male grandparents) were held in each site to provide information on community views about malaria, treatment-seeking behaviour for febrile illness, preferred forms of medication, and reactions to the proposed prepackaged drugs. Information was also sought about acceptable communication channels, from which IEC activities could be developed. In-depth interviews with community leaders served the same purpose.

Quantitative data were collected using a questionnaire that targeted whole communities. The questionnaire was administered to the parent (or other caregiver) of every child in the study age group who had had an episode of febrile illness in the two weeks preceding the survey. Respondents were asked to describe the children's signs and symptoms and any action taken to relieve the problem. They were asked to list specific orthodox medicines given to the children, the source of these, and the amounts given. Although the initial survey did not record the delay between recognition of illness and first action, this information was gathered later through a supplementary questionnaire given to a random sample of the original respondents.

#### **UGANDA**

**The aim of the situation analysis in Uganda was to** assist the core team in developing and piloting interventions to provide early appropriate home management of fevers in children aged 6–60 months, including prepackaging of antimalarials, appropriate labelling and distribution, and IEC strategies. The analysis was based on FGDs with parents, caregivers, and community-based health care providers, IDIs with key informants, informal interviews with community members, and case narratives from mothers or caregivers with children aged 6–60 months who had had fever in the previous two weeks. In addition, there were observations and IDIs of health care providers (owners of private clinics and drug shops, staff of the formal

health unit). Continuous qualitative assessments were carried out during the intervention. These assessments took place in sampled villages at the start of, halfway through, and at the end of the study; they were designed to confirm quantitative findings and describe the factors underlying treatment-seeking practices for febrile illness in under-fives. In particular, they addressed perception about childhood fevers, treatment-seeking for childhood fevers, uptake of the interventions (IEC, use of prepackaged drugs, referral of severely ill children), and performance of drug distributors. The acceptability of the drug Musujjaquin and access to DDs were also assessed.

#### **CHALLENGES AND LESSONS LEARNT**

A situation analysis requires a significant amount of time to be spent in interaction with community members if the core team is to gain a thorough understanding of relevant issues before putting the intervention in place. To ensure an accurate picture of the existing situation –and thus a reliable basis for a successful programme – the team needs members experienced in the conduct and reporting of a situation analysis and must be prepared to invest sufficient time (4–6 months) in the activity. Much of the essential baseline information is already available in the literature; countries that plan to embark on interventions can make use of this information and thus concentrate on collecting only new data.

### **3.5 Step 5: Selection of drug distributors**

Involving community members in the mass administration of drugs was tried in the early 1990s for community-level treatment of onchocerciasis using ivermectin (WHO, 1996). The results of that large-scale multi-country study, and of other similar projects, showed that the more the target communities are involved, the better and more sustained the drug delivery process (Katarawa & Mutabazi, 1998; Mutabazi

& Duke, 1998). Similar evidence has come from studies on malaria. Kidane & Morrow (2000) documented a 40% reduction in under-five mortality when mothers were trained to recognize symptoms of, and treat, malaria. Marsh et al. (1999) documented a 62% increase in the appropriate use of antimalarials when shopkeepers were properly trained in the treatment of malaria. In Cambodia, before prepacks became available, 90% of all malaria diagnoses were made by CHWs (WHO, 2004). With the adoption of the HMM strategy, community-based distributors were seen as the logical way forward, and many people with widely different backgrounds have therefore been used – and continue to be used – in a variety of small projects.

In the four countries documented here, drug distributors were key to the success of the interventions. Though referred to by different names in the different countries – community health workers in Burkina Faso, community-based agents in Ghana, medicine distributors in Nigeria, drug distributors in Uganda – their importance lies not in what they are called but in what they can do to achieve the highest coverage.

Distributors were selected during situation analysis. After group discussions with opinion leaders and community members to clarify the roles of the potential distributor, community members put forward the names of people whom they felt could do the job. Distributors who could not read or write were used when necessary, but were always supervised closely and assisted by a literate community member – often a close relative.

### SELECTION OF DISTRIBUTORS

Drug distributors can be chosen in a variety of ways:

- » by democracy and community consensus
- » by local government appointment
- » by cooption from among existing drug vendors and non-formal health care providers
- » through involvement of existing private clinics that already have experience of working with a wide range of people in the community.

*Table 1* provides a summary of the type of distributors who were selected in the four countries. They fell into two main groups – existing providers and newly created distributors. The latter group were identified for the purpose of the study and may or may not have had any experience of working in health; they included farmers, teachers, pastors, artisans and mothers/caregivers.

*Table 1.*

CATEGORIES OF DRUG DISTRIBUTORS USED IN THE VARIOUS COUNTRIES

	BURKINA FASO	GHANA	NIGERIA	UGANDA
<b>EXISTING CARE PROVIDERS AT COMMUNITY LEVEL</b>				
<i>Private/non-formal health care providers:</i>				
chemical sellers			✓	✓
drug vendors		✓	✓	✓
spiritualists		✓	✓	
private practitioners (TBAs, etc.)		✓	✓	✓
<i>Public health care providers:</i>				
nurses			✓	
community health workers	✓			
<b>NEW PROVIDERS SELECTED DURING THE HMM STUDIES</b>				
Mother support groups	✓			
Teachers		✓	✓	
Farmers		✓	✓	✓

## BURKINA FASO

**Active community volunteers from the Bamako Initiative** were the core drug distributors in Burkina Faso; where there no active Initiative volunteers, the community selected new distributors. In general, distributors were drawn from both sexes; it was usually the men who travelled to supply the drugs to the women who then remained at home and dispensed the drugs to caregivers who needed them.

Mother support groups have been in existence in Burkina Faso for some time. Their primary role is education of mothers on breastfeeding, the use of bednets, and other health activities. Some of the mothers from these groups were selected by community members to be distributors of the prepacks. One was identified as a coordinator, to be in charge of a number of mothers living in a defined geographical area. The coordinator ensured that the other mothers and primary caregivers of children were well informed about the key elements of the strategy and the use of the prepackaged drugs; she also acted as a mediator between the core team and the mothers at the community level. In this programme, the importance of mothers as principal care providers for children was heavily emphasized. CHWs

were merely assigned the role of managing the stock of drugs, including its replenishment and storage, whereas the decision to treat was entrusted to the primary caregiver (in most cases, the mother of the sick child). Nonetheless, informal interviews conducted in some villages suggested that the status of CHWs had been enhanced by the introduction of the intervention, despite their limited responsibility.

### *Plate 1.*

MOTHER SUPPORT GROUP IN BURKINA FASO



## GHANA

### **Drug distributors in Ghana were selected during**

FGDs in the various communities where the interventions were put in place. In some communities, distributors were selected during FGDs; in others community members met on their own to select a distributor. Once distributors had been identified and trained, they were introduced to the communities and their roles and responsibilities were explained.

To qualify as a distributor, it was important to be a hard-working, dedicated, and trustworthy resident of the community. For the sake of proper record keeping, the core team recommended that drug distributors be able to read and write; this recommendation was followed in all but one community, in Wa, where it proved difficult to find two literate volunteers. One person who could not read or write was therefore engaged, and his activities were closely supervised and monitored by the literate volunteer and the field supervisors.

A total of 56 distributors were trained, most of whom were farmers. Most were also men – community members felt that men would be able to do more follow-up than the women who had to concentrate on their various household responsibilities. The distributors administered the first dose in order to demonstrate use of the prepacks, then gave the rest to mothers/caregivers for them to continue treatment at home. The distributors then followed up to ensure that mothers/caregivers complied with the treatment. Follow-up visits also provided the opportunity to educate the community. Monthly training updates were organized by the core team in all the study communities; these training sessions gave distributors the chance to share their ideas and experiences with each other and to review their activities.



## NIGERIA

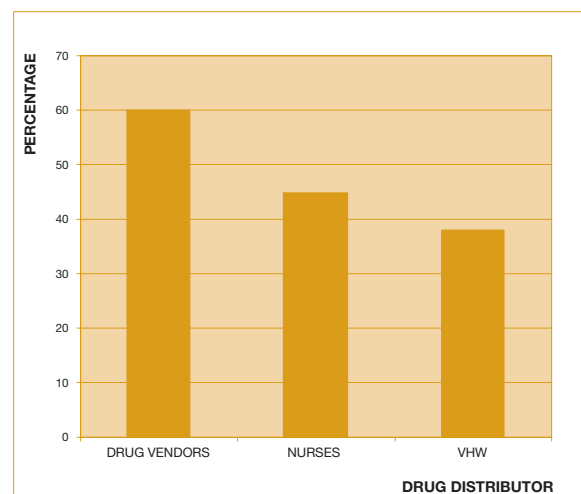
**Volunteer village health workers (VHWs), teachers, patent medicine sellers, and health staff from government and private health care facilities were identified and trained as distributors by the project staff in collaboration with community leaders and members. The communities vouched for the character of the chosen distributors. The distributors' responsibilities were not only to sell the project medications but also to provide health education at individual and village level. Health education and promotion activities included health talks and drama designed to provide appropriate messages.**

A total of 22 people were recruited in Ukehe, Igbo Etiti LGA, for the drug distribution activities. Eight were patent medicine vendors, three were teachers, six were health staff (three nurses and three community health extension workers), three were TBAs, and two were VHWs. Distributors chosen in all three study sites are summarized in *Table 2*.

Attrition rates (*see Figure 5*) seemed to be highest among the drug vendors: they felt that sale of the cheaper programme drugs was jeopardizing their own private sales. Some nurses were lost to the programme after transfer to other areas.

*Figure 5.*

ATTRITION OF DRUG DISTRIBUTORS IN NIGERIA



*Table 2.*

TYPE OF DISTRIBUTORS BY PROJECT SITE IN NIGERIA

Type of distributor	Project site			Total (%)
	Idere	Ukehe	Mbaugwu	
Village-based health workers	74	5	16	95 (73.6%)
Health staff (nurses, TBAs)	4	6	4	14 (10.9%)
Patent medicine vendors	4	8	3	15 (12.0%)
Schoolteachers	2	3	0	5 (4.0%)
<i>Total</i>	84 (65%)	22 (17%)	23 (18%)	129
Dropped out	42 (50%)	10 (45.5%)	2 (8.7%)	55 (42.6%)

## UGANDA

### Selection of distributors in Uganda took place during

village council meetings; to ensure adherence to the recommended guidelines, at least one member of the research team always attended these meetings as an observer. The criteria for selecting distributors were that they should be able to read and write and should be respected and permanent residents of their communities, good communicators, and good community mobilizers. Most of the distributors were of limited literacy and their records had to be kept in the local language (Luganda) and translated into English before entry into the computer.

Altogether, 420 distributors were selected in the three study sites – 159 in Butenga, Masaka, 66 in Kiringente, Mpigi, and 195 in Sekanyonyi, Mubende. Uganda was the only one of the four countries where the majority (62.0%) of distributors were women; most had primary-level education. The distributors were highly motivated about the services they were rendering and the attrition rate was only 3%. Most of them believed that serving as a distributor had raised their status in their communities: people knew and respected them and appreciated their services. One female distributor said:

*"If I wanted to stand for a post of a village leader (LC1 executive) in the coming elections, I would sail through very easily because now everyone knows me as a musawo (health worker) and they value me".*

There were at least two distributors in each parish and more in larger communities, making access to drugs easy for the mothers/caregivers:

### CHALLENGES AND LESSONS LEARNT

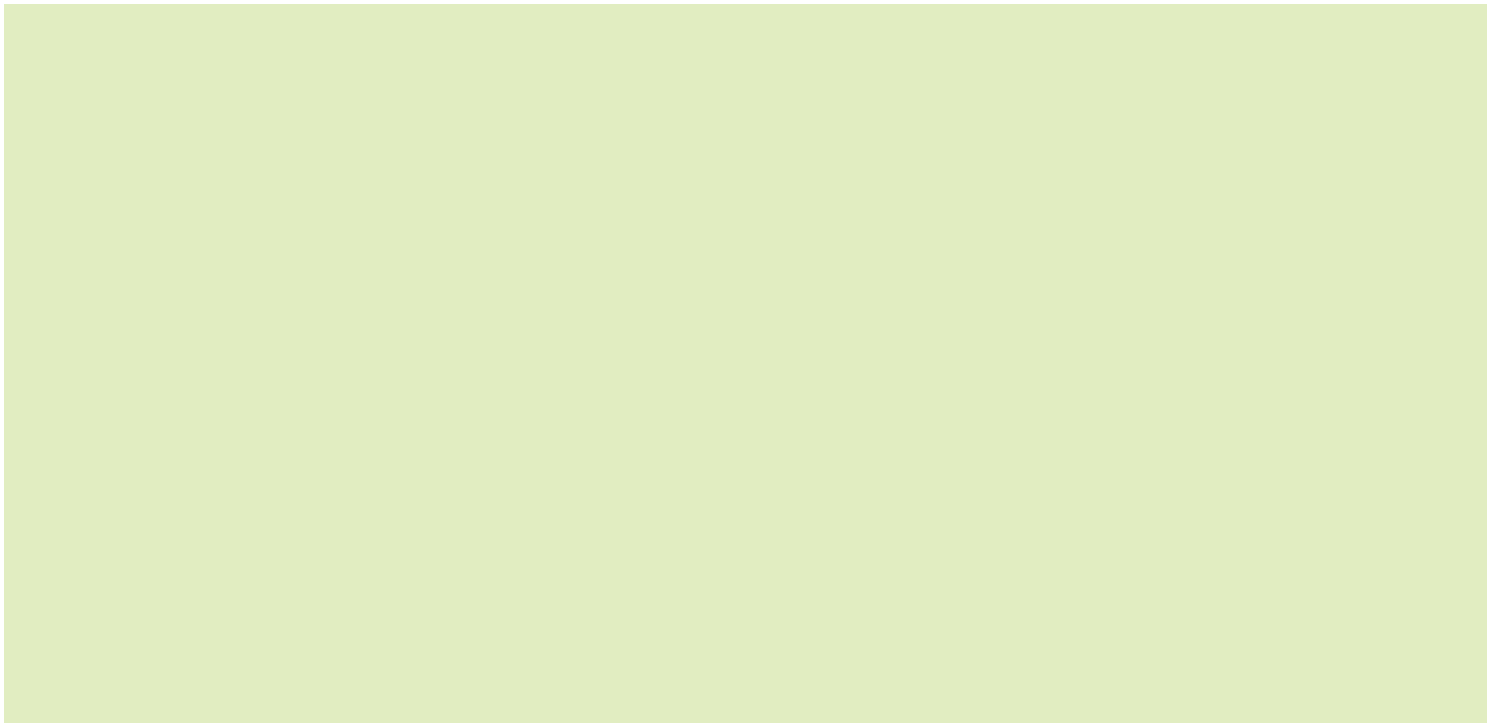
Prominent among the challenges faced by the four countries was the fact that existing providers tended to oppose the new system, concerned about its effects on their own livelihoods. In places where they were used as distributors, they did less well than others; for example, their follow-up and home visits were less effective. They tampered with the prepacks and had a high attrition rate.

Overall attrition was very low in Uganda, but some trained people did leave and countries must be ready to train replacements; if resources allow, it would be valuable to have a reserve of trained people to replace those who leave. Some key health workers were lost as a result of transfer during the course of the implementation process. Although this was a loss to the communities in which they were working, these health workers could prove to be valuable resources in their new areas if implementation were to be extended.

Community involvement in the selection of drug distributors is essential to the success of any community-based programme and was the principal means by which distributors were selected in the four countries. It was only in Burkina Faso and Uganda, however, that a substantial proportion of distributors were women. Studies have shown that women volunteer health workers play an important role in health promotion but that their household commitments tend to deter their involvement in health activities (Rahman et al., 1996). Nevertheless, every effort should be made to include them in such activities.

<i>Average distance from distributor</i>	<i>Proportion of respondents</i>
≤ 10 minutes' walk	56.1%
≤ 15 minutes' walk	74.1%
≤ 30 minutes' walk	94.3%





## 4. MAIN INTERVENTION ACTIVITIES

In each of the four countries, the main intervention included the following steps:

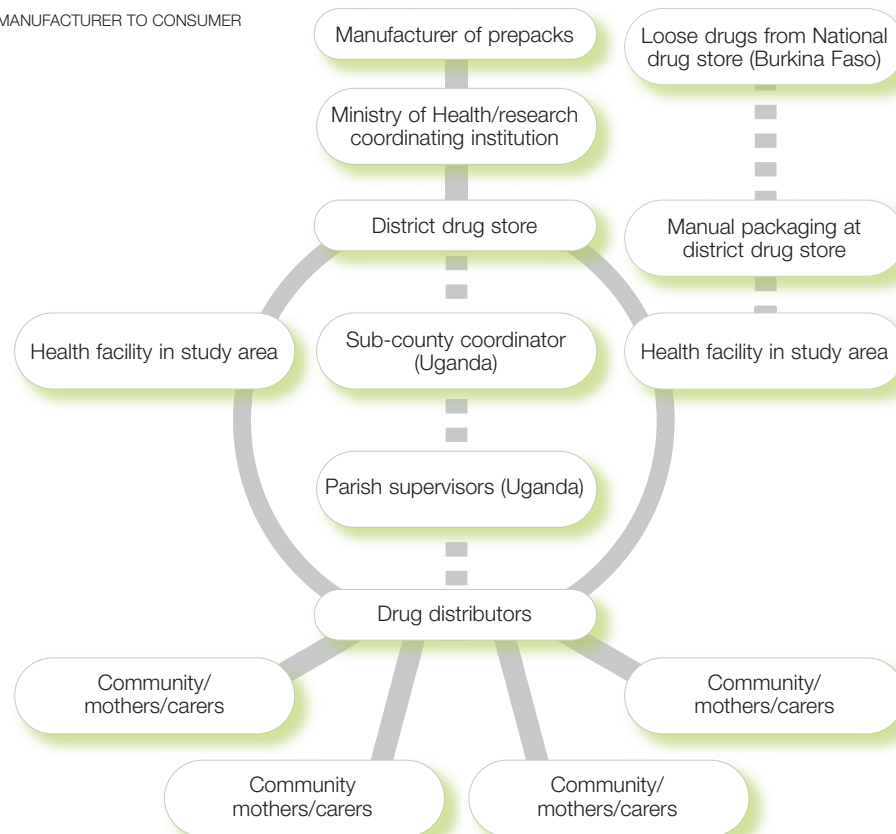
1. Procurement and supply of drugs
2. Development of training manuals and training of key implementers
3. Development and implementation of IEC strategies
4. Dispensing and use of the prepacks at community level.

### 4.1 Step 1: Drug procurement and supply

For large interventions, it is crucial that sufficient stocks are provided for set periods of time to avoid both stock-outs and expiry of drugs. Careful consideration must also be given to drug storage and distribution channels. Similar systems were used in all four African countries; *Figure 6* provides a schematic representation, with the slight variations employed in Burkina Faso and Uganda indicated by dotted lines.

*Figure 6.*

DRUG FLOW FROM MANUFACTURER TO CONSUMER



## BURKINA FASO

### **Burkina Faso's normal drug flow system was used**

for the procurement and distribution of antimalarials. The initial stock of antimalarial (chloroquine) and antipyretic (aspirin) drugs was received from the medical stores; tablets were supplied in tins of 100 and were assembled into prepacks by the district drug store managers at the health centres. Sufficient drugs to cover a specified period of time were then delivered, free of charge, to CHWs in the participating communities who then ensured that the mother coordinators received their supplies. To prevent the prepackaged drugs being used other than for children, a separate consignment of loose drugs was provided to CHWs for dispensing to older patients.

Drugs were packaged in different dosages, targeted at four age groups: 0–6, 7–11, 12–35, and 36–69 months. Packages were colour-coded for the different age groups; each contained a full course of treatment and was labelled with pictorial instructions for administering the drugs.

Drugs were sold by the distributors to the villagers at a price agreed with the local health management team. The price was calculated as the sum of the prices of the individual tablets contained in each prepack as charged at the health centre operating in accordance with the Bamako Initiative. There was no additional charge to the caregivers for the plastic bags in which drugs were packaged, for the leaflets, or for the labour involved in preparation of the prepacks.

With the proceeds of the sale of the first stock of drugs, each distributor established a revolving fund that allowed him or her to replenish the stock from the health centre drug store. The prepacks were obtained by the CHWs from the health centre at 90% of the price at which they were sold to the caregivers; CHWs were then allowed to retain 10% of the selling price as an incentive.

### *Plate 2.*

PREPACKS USED IN BURKINA FASO



## GHANA

**A local drug company produced all the prepackaged** drugs; the project paid only for the aluminium foil used in packaging (US\$ 9000). The drugs were packaged in two doses: white prepacks, bearing a logo of a crawling infant, provided 75 mg chloroquine base daily for 3 days for 6–11-month-olds, and yellow prepacks, bearing a logo of a walking child, provided 150 mg chloroquine base daily for 3 days for 1–6-year-olds. The colours used for the prepacks were based on preferences expressed by community members during the baseline survey (*see page 47*). Age group, dosage, and instructions for administration were printed on the prepack. Community members suggested several names for the prepacks but could not settle on one; prepacks were therefore referred to by their active ingredient (chloroquine).

The usual channels were used for the supply of drugs for HMM – that is, Ministry of Health → district pharmacist → sub-district → community-based agents. Prepacks were distributed to study communities through durbars after drug distributors had been trained and communities sensitized. Drugs were replenished as and when necessary by the research team through field supervisors. Tally cards were then used to monitor the issue of drugs. Drugs were stored in wooden cupboards and boxes and the distributors also had stocks of plastic cups and spoons for administering the drugs to the sick children. Drugs dispensed were checked with the fever register and tally cards when the supervisors went on their rounds.

Plate 3.

PREPACKS USED IN GHANA



## NIGERIA

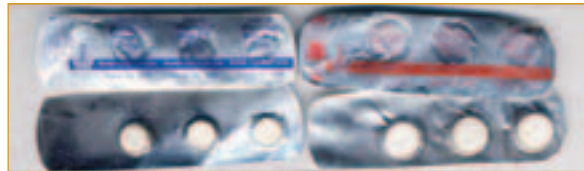
**Drug distribution through existing outlets was a major feature of Nigeria's implementation strategy** (see *Figure 6*). Chloroquine tablets were produced by local drug manufacturers in blister packs costing 25 naira (less than US\$ 1.00) each and with a guaranteed shelf life of 2 years. Each prepack contained tablets of the correct dosage for one treatment course (75 mg chloroquine base for children aged 6 months to 1 year and 150 mg chloroquine base for children aged 1–6 years) and carried a picture of a child of the appropriate age. Prepacks were divided into three compartments, labelled Day 1, Day 2, and Day 3, each containing one tablet to be taken at the same time of day. A total of 20 000 prepacks of chloroquine were produced for the intervention phase – 5000 for children aged 6 months to 1 year and 15 000 for children aged 1–6 years.

Community members raised a number of concerns about the prepacks. They included the fact that drugs in previous projects (for onchocerciasis) had been dispensed free of charge, whereas the chloroquine

prepacks were being sold – and were more expensive than similar drugs on the market. There was no flexibility in the number of drugs that could be purchased since they were prepacked. The packaging was not as shiny as other blister packs sold in the area. The core team made every effort to deal with these issues as soon as they became aware of them, and were often able to solve the problems. Nevertheless, these community concerns had a negative effect on the overall performance of the new product – although the problem lessened with time.

### *Plate 4.*

PREPACKS USED IN NIGERIA





## UGANDA

### A local pharmaceutical manufacturer, Kampala

Pharmaceutical Industries (KPI), was contracted to pack the drugs and label them appropriately. KPI complied with WHO recommendations for packaging and labelling and obtained clearance from the National Drug Authority for the strength of the tablets, the messages, and the brand name of the packs. Registration of these drugs was temporary, for the purposes of the study only.

The research team designed the messages and illustrations on the packs, based on information gathered in the baseline qualitative studies, and ensured that the product was packaged in an attractive manner. Baseline assessments had shown that people attached value to sealed tablets because they perceived them to be clean and of good quality. The chloroquine prepacks were brand-named Musujjaquin, which derived from “musujja”, the term used in the local language (Luganda) for fever. This name quickly became popular, and the communities commonly referred to the project as “the Musujjaquin project”.

After procurement from KPI, the drugs were kept in MoH stores and delivered to district stores during the supervisory visits of the central research team. Sub-county supervisors collected drugs from the district stores and distributed them to parish supervisors and DDs during their monthly meetings or on request. If stocks run out before the next scheduled visit of the central team, the district directors of health services and sub-county supervisors often collected drugs directly from the MoH stores; DDs sometimes collected drugs from the designated health units if their stocks needed replenishment before the scheduled monthly meeting. Records were kept at all levels of the quantities of drugs in stock.

During the monthly meetings project implementation was reviewed, supplies such as record forms, files, folders, pens and pencils were distributed, and activities were planned.

### CHALLENGES AND LESSONS LEARNT

All four countries made use of the existing drug supply system rather than establish a parallel scheme that might subsequently break down. This would also ensure commitment to the supply of drugs if the interventions were to be scaled up in the future. The main challenge was to find an acceptable manufacturer, willing to produce the prepacks at a reasonable price; in Ghana, Nigeria, and Uganda this was achieved through negotiation with manufacturers and assurances that there would be a market for the product. Community members in Nigeria were concerned about the packaging of the drugs, and care must be taken to ensure that drugs are attractively packaged. The choice of packaging will inevitably depend to some extent on available financial resources: nevertheless, blister packaging – though relatively expensive – should always be the first choice since it allows better conservation of the drug, is easy to open, and looks more professional (WHO, 2004).

#### Plate 5.

PREPACKS USED IN UGANDA



## 4.2 Step 2: Preparing training manuals and training key implementers

Adequate training is essential in the implementation of any activity and should be based on the situation analysis and an agreed implementation framework (WHO, 2005). All personnel with a role to play in the intervention were trained; the duration of training depended on the individual. The central research team worked with a training expert to develop training materials. All training manuals were new but included relevant information from existing national malaria manuals and from other sources. Three main groups of personnel were trained – trainers, supervisors, and drug distributors.

### TRAINING OF TRAINERS

Some DHMT and core team members were trained as trainers by experts in the following areas

- » malaria – causes, signs and symptoms, and prevention
- » treatment and follow-up
- » referral
- » communication and community entry
- » monitoring
- » storage of drugs and record keeping.

### TRAINING OF SUPERVISORS

Supervisors were crucial to the projects and were trained in all the countries. Training lasted a maximum of three days and covered the same topics as the training of trainers. Supervisors were DHMT members, sub-district heads, and sub-district community outreach teams (mainly community health nurses).

### TRAINING OF DISTRIBUTORS

With the exception of monitoring, training of selected drug distributors covered the same topics as training of the other two groups; it was explained to the distributors that their activities would be monitored. Training was designed to be as interactive as possible. Moreover, once the formal classroom training was over, distributors who had problems with specific topics were retrained during regular visits by supervisors.

## BURKINA FASO

**Trained persons include nurses (as future trainers),** community health workers (CHWs), and individuals in charge of the drug stores at the health-centre level. The manuals for nurses and their assistants were developed in collaboration with the medical officers in the intervention areas. Two nurses from each health centre in the province were trained; they then trained the drug store managers at their health centres and all CHWs and mother coordinators who had been selected as distributors in their catchment areas. Training for members of the village cells included use of the prepackaged antimalarial (PPAM) drugs, recognition of the symptoms of both uncomplicated and severe malaria, and the danger signs that necessitate referral to the health centre. These individuals were also trained to act as intermediaries between other members of the community and to give advice when needed.

The CHWs were also trained in the management of drugs. They were trained as trainers of the community members and were in charge at the community level. Selection of CHWs at community level and of mothers to be trained was discussed between the core team, community leaders, and village heads. The health worker at the health unit trained the CHW in the village as well as the mothers.

In all, 76% (78/102) of the nurses and all 35 health centre drug store managers in the intervention areas underwent training during the first year of the project and a refresher course during the second year. At the community level, CHWs were trained in all 375 villages of the province. The estimated number of mothers with children under 5 years of age was 37 500, of whom 1875 (5%) were trained.

## GHANA

**The training manual for CBAs and field supervisors** was developed by health educators and social scientists on the project, with input from the WHO/TDR manager and a consultant who visited the core team during implementation of the intervention. A draft manual was prepared at a meeting with the core technical team and pretest exercises were conducted in all the study districts to assess its effectiveness for training. The manual was subsequently finalized and given to the various teams to use in their training activities.

The manual for field supervisors and health staff was divided into modules as follows:

- » Home management of fevers project – provides insight into the problem and summarises what home management entails.
- » Adult learning – describes what adult learning entails and methods of adult learning.
- » Team building – helps the reader to understand team building is and how to work as part of a team.
- » Community entry and mobilization – discusses community entry, structures, involvement and mobilization.
- » Communication in health – provides basic principles of communication and teaches communication skills.
- » Learning about malaria – deals with causes, signs and symptoms, treatment, and prevention of malaria.
- » Gender and health – discusses the role of men in health care and how to get men actively involved.
- » Role of the health team – outlines the roles of field supervisors, community-based agents, community leaders, carers, and community members.
- » Basic social marketing skills – deals with marketing strategies and how to attract customers.

- » Monitoring of intervention and field operations – describes field operations and organization of the intervention.
- » Stores and records keeping – describes how to keep records and store drugs using fevers register, tally cards, and community tally sheet, and stresses the importance of record keeping.
- » Evaluation and follow-up – discusses the basic principles of evaluation of the intervention and team performance.

Health educators and social scientists attached to the various districts trained the field supervisors who later – overseen by the supervisors – trained the CBAs. On average, all training sessions including updates lasted for five days. Participatory adult learning methods were used during training, including question-and-answer sessions, role-play, pile-sorting, and discussions; there were also lectures, demonstrations, and brainstorming exercises. Tools used in training CBAs, apart from the training manual, included IEC flipcharts, treatment chart, fevers register, beads/rosary, stopwatches, disease tally sheets, and handouts on malaria. Participants were evaluated at the end of each training session to assess how well they had done; evaluation exercises took the form of demonstrations, questions, and role-plays.

Regular training workshops were held to update the knowledge of field supervisors, CBAs, and other personnel working on the project.

## NIGERIA

**Project staff, the field supervisors, and the field assistants** were trained in four sessions outlined below (*see also Table 3*). The trainers were the core team members, another medical doctor and a health educator.

- » Session 1 – basic training on early and appropriate treatment of childhood fevers in line with the training objectives.
- » Session 2 – record keeping, using both the special individual sales notebooks and the monthly drug sales returns forms.
- » Session 3 – practice/mock sales sessions inside the training venue (health centre), covering:
  - > recording of child’s personal data including his/her age;
  - > history taking on the presenting complaints;
  - > identification of hot body;
  - > recognition of the clinical signs and symptoms of malaria and acute respiratory infection (rapid/difficult breathing, in-drawing of chest wall, cough);
  - > determining which drug pack to use and when (for each illness described);
  - > describing the correct dosage for each age group;
  - > describing how to monitor, with accurate records, children who have received the tablets and the results of the treatment after four days;
  - > describing what to do, including when and where to refer, if any child develops serious side-effects or does not respond to treatment;
  - > recognition of signs of worsening illness and action to take – referral;
  - > education of mothers and other caregivers.
- » Session 4 – practical demonstration in the community with children who are actually sick.

Table 3.

TRAINING APPROACH USED IN NIGERIA

Who was trained	By whom	Content of training	Materials and methods used	Job description
Trainers: principal investigator (PI), health educators (HEs), nurses, medicine distributors (MDs)				Train other project staff, distributors, and mothers; procure and supply drugs
Supervisors: (nurses at community health facility, community health extension workers, MoH staff)	PI, HEs, MDs	Record-keeping, monitoring, of activities	Posters, talks, hands-on practice, audiovisual methods, role-play	Deliver tabs, Monitor sales, supervise distributors /mothers.
Distributors	PI, HEs, MDs	Recognize illness, sell appropriate drugs, refer if necessary	Talks, posters, flipcharts, pamphlets role-plays, drama	Collect drugs, identify type of illness, sell appropriate drugs, keep good records, refer if necessary
Mothers	PI, HEs, MDs, nurses	Recognize early signs of illness, buy appropriate. Drugs, treat appropriately	Talks, role-play, drama, flipcharts, pamphlets, posters	Recognize early signs of illness, buy drugs, treat appropriately; recognize early signs of worsening and see nurse promptly

## UGANDA

**The research team ensured that all field staff** involved in the intervention received sufficient training to give them the information and skills needed to promote appropriate home management of fevers in children 6–60 months. The training was done in a “cascade” manner: the central research team were trained by the community-training expert to become facilitators; they trained some of the district health team members as trainers; these district trainers then trained the sub-county supervisors, parish supervisors, and drug distributors (*see Table 4*).

The central research team worked with the training expert to develop training materials:

- » a facilitator’s manual/ trainer’s guide
- » a learner’s manual (translated into Luganda)
- » memory aid cards
- » record forms.

A variety of training approaches were used, including group training skills, skill-enhancement strategies (during follow-on training and monthly supervisory meetings), and person-to-person communication (during individual on-site supervision of distributors and parish supervisors). In the training sessions for distributors, ample time was devoted to practical demonstrations. The trainers used role-plays and demonstrations to teach distributors how to assess, classify, and treat children with malaria and pneumonia. The distributors were then given a chance to practice and received immediate feedback.

### CHALLENGES AND LESSONS LEARNT

In developing training manuals it is important to consider the various categories of people to be trained and to tailor the manuals to suit their needs – the simpler the manual, the easier it is to understand. Distributors who are not fully literate represent the greatest challenge: a significant amount of time was invested in training such people and monitoring them when drugs were dispensed. The end of the formal period of learning should not be regarded as the end of training but as the beginning; periodic refresher sessions are essential if the desired goal is to be achieved.

Table 4.

TRAINING APPROACH USED IN UGANDA

Who was trained	By whom	Content of training and roles of trainees
Central research team	Community training expert	Central coordination of the project; planning and implementing project components; overall supervision of activities
District health team	Central research team	Storage of drugs; keeping records of stocks; collation of data collected by DDs; training and supervision of DDs
Sub-county supervisors	District research team	Overall coordination of county activities; ensuring continuous supply of study drugs; updating district coordinators on field activities
Parish supervisors	District health team and sub-county supervisors	Overall coordination of county activities; ensuring continuous supply of study drugs; updating district coordinators on field activities
Supervisors (all those listed above)	As above	Supervision of DDs; updating of sub-county coordinators; mobilizing communities for IEC activities
Distributors	District research team	Assessing, classifying, and treating children with malaria; identifying severely ill children and referring them; advising mothers on complying with treatment; advising mothers on prompt referral of severely ill children; keeping records of children treated with study drugs
Mothers	The mothers were educated on what to do when their children became sick	

### 4.3 Step 3: Development and execution of IEC strategies

The cornerstone of HMM implementation is to provide caregivers with the information that will enable them to recognize malaria, assess its severity, and take appropriate action. A variety of participatory techniques are used to achieve this (WHO, 2005). Many control programmes continue to use the “health belief model”, which assumes that a change in community knowledge will lead to a change in behaviour. In many programmes this has proved not to be the case; as Heggenhougen, Hackethal & Vivek (2003) have noted, programme personnel have failed to take into account the importance and impact of local perceptions and their influence on uptake of health interventions. The target population will accept biomedical concepts only if they are expressed using locally recognized analogies and in forms that are easily understandable (MacCormack, 1984).

Each of the four countries considered here used different IEC techniques, according to the study communities concerned. What was common to all, however, was the pivotal role of IEC in determining the success or otherwise of the interventions.

Development of the IEC messages began during the situation analysis and continued throughout the intervention phase and during monitoring. During this evolutionary process, it is important to explore the feasibility of collaborating with national health education units. Once developed, the IEC messages and materials should be pretested in the community where they will be used, modified if necessary (taking careful account of input from the community), and then finalized at central level.

### INITIAL LAUNCH AND SENSITIZATION ON THE USE OF PREPACKS

All teams launched the interventions by explaining the strategy to community members. The involvement of high-ranking individuals from local government, from bodies such as the ministry of health and other ministries, and health workers in the communities where the implementation will take place is important. These individuals should be present at the initial sensitization meetings and when drug distributors are being introduced to communities; their involvement will lend weight and credibility to the strategy and show support for the DDs on whom the success of the strategy depends. Initial meetings should include discussion of the dangers of malaria, early recognition of the signs and symptoms of the disease, and treatment using the prepacks.

To sustain the intervention and ensure that use of prepacks for the treatment of malaria becomes a matter of routine, the messages should be reinforced – by health educators, supervisors, health workers, and drug distributors – at every opportunity, including regular community meetings, in churches, and at antenatal and infant welfare clinics. Posters displayed prominently in health facilities and in the community are valuable tools.



## BURKINA FASO

### In Burkina Faso, sensitization tours were organized

to all the communities in which the strategy was implemented. The research team met the DHMT in each of the zones concerned, to inform them about the objectives of the strategy. The subsequent information/sensitization tours covered all 375 villages and hamlets of the province, using treatment charts, drug labels, posters (see Figure 7), and radio jingles to explain to community members how the drugs should be used.

Figure 7.

POSTER SHOWING DRUG DOSAGES USED IN BURKINA FASO

AGE ET POIDS		1er JOUR 10 mg / 5 mg	2ème JOUR 10 mg / 5 mg	3ème JOUR 10 mg / 5 mg
0-6 mois	< 10 kg	1	1	1
7-11 mois	10-15 kg	1	1	1
12-23 mois	15-25 kg	1	1	1
2-5 ans	25-35 kg	1	1	1
6-11 ans	35-45 kg	1	1	1
12-17 ans	45-55 kg	1	1	1
18 ans et plus	> 55 kg	1	1	1

## GHANA

### Changing people's behaviour requires that they be

given the right information. The project in Ghana made use of and IEC flipchart and similar strategies to improve the health care-seeking behaviour of the communities. The flipchart designed as a tool for health education in the districts was developed on the basis of information about malaria:

- » causes and transmission
- » signs and symptoms
- » prevention
- » the need for prompt and appropriate treatment
- » referrals
- » other childhood illnesses.

The flipchart carried pictures that illustrated these points; it was pretested and then reviewed at a meeting of the core team. The results of the pretesting were discussed and the necessary changes were made.

The poster shown in Figure 8 was designed on the basis of information provided by community members. In Ghana, the drug prepacks for children aged 6–11 months (baby pack) were white for easy identification. Community members gave the following rationale for their choice of white:

*“It should be white because the children are breast-feeding and the milk is white”*

The picture they suggested was that of a crawling child because a child under 11 months is crawling.

Drug prepacks for children over 1 year of age were yellow: according to community members, this represented the yellow eyes and urine of the malaria victims.









The channels used for health education included home visits, social gatherings, community durbars and moth-

ers' visits to distributors. In addition, the team members and health workers went into the communities at dawn, using megaphones or town criers to deliver their messages. Videos were shown in the evenings. Health educators made every effort to engage community members in discussion, rather than simply providing a one-way flow of information.

After they were trained, the DDs also took an active part in educating the community, going from house to house to talk to household members. They also spent time talking to people after church services and on communal labour days and taboo days (days of rest).

Figure 8.

POSTER SHOWING DRUG DOSAGES USED IN GHANA

MANAGEMENT OF FEVERS IN CHILDREN AGED 6 MONTHS - 6 YEARS		
AGE	CARER REPORTS HOT BODY	CARER REPORTS HOT BODY /FAST BREATHING/COUGH
<b>UNDER ONE YEAR</b> (6 Months to 11 months) 	<b>TREAT AS MALARIA</b> Give One Tablet a day 	<b>TREAT AS MALARIA &amp; ART</b>  Give One Tablet a day  Give One Tablet in the <b>MORNING</b> and one Tablet in the <b>EVENING</b>
<b>1 year to 6 years</b> 	<b>TREAT AS MALARIA</b> Give One Tablet a day 	<b>TREAT AS MALARIA &amp; ART</b> Give One Tablet a day   Give One Tablet in the <b>MORNING</b> and one Tablet in the <b>EVENING</b>

**TREAT ONLY CHILDREN BETWEEN 6 MONTHS TO 6 YEARS. REFER CHILDREN BELOW 6 MONTHS TO THE NEAREST HEALTH POST OR HOSPITAL.**

Once community members had learned about the drugs, they passed information to family and friends both within and outside their communities. According to one respondent:

*"I told my sister who lives in the next community about the drugs when I visited her, so she came to buy some for her child when the child was sick. She told me the drug was good and even wanted some for keeps at home, for future use."*

Another added:

*"We inform those who haven't used the drugs before to go to the CBA for the hot body medicine for their children when we see that their wards are not well."*

Plate 6.

RESEARCH TEAM VISITING A COMMUNITY IN GHANA



## NIGERIA

**In Nigeria, IEC messages evolved from the situation** analysis; some were new while others were based on existing messages about drug use (completion of treatment and proper storage of drugs). Strategies used for IEC included community sensitization, individual counselling of caregivers by trained distributors, the use of posters and drug labels, short stories on flipcharts, plays developed by drama experts and performed by high-school children, and drug labels. The drama messages focused on the benefits of prompt and appropriate treatment and the dangers of delay between onset of febrile illness and action by caregivers. They stressed the importance of early recognition and prompt effective treatment of malaria, of giving treatment as instructed and completing the full dose, and of recognizing severely ill children and referring them to the nearest health facility.

The drug distributors in Nigeria were active in providing health education. Some worked on an individual basis with parents of patients, while others used pamphlets to call the people in the village together. A male distributor in Idere explained:

*“I normally called village meeting in the evening.”*

A female distributor also observed that:

*“Health talk is a routine and there was no problem about it. It's part of our job.”*

One female distributor gave examples of community scepticism that she had to overcome to educate the public:

*“At the early stage, the people started wondering whether these drugs were meant by the ‘white people’ to reduce the population of under 6 years. They use to ask ‘Why did they not make the drugs available for everybody?’ I had to explain everything for them to properly understand why the drugs had been brought for children.”*

A female distributor linked the need for health education of the villagers with the fact that she was undertaking a new role:

*“However, because I don't sell drugs originally, people don't know much about me. So I have to move out myself to create awareness.”*

## UGANDA

**Visual media and activities were used in Uganda** to increase awareness and encourage the use of prepackaged drugs – posters, messages on calendars and T-shirts, drama, and games. These IEC strategies and the key messages they conveyed were based on information gathered during the situation analysis. They were pretested among the target population and adapted to ensure that the messages were well understood by the communities. The key messages were:

- » the importance of early recognition and prompt effective treatment of fever (malaria);
- » the importance of giving treatment as instructed and completing the full dose (compliance);
- » the importance of recognizing severely ill children and seeking prompt treatment for them from trained health workers;
- » the need to recognize children who do not improve on home treatment and to seek treatment for them urgently from trained health workers.

Literacy levels were low in the target communities, and interactive sensitization seminars and group discussions were therefore regularly used to disseminate information at different levels. Messages conveyed at these sessions were then passed to family and friends – a “multiplier” effect.

During the sensitization sessions, mothers/caregivers were very eager to learn more about management of childhood fevers and asked many questions regarding malaria and pneumonia, their prevention and treatment. These opportunities were used by the team to provide more information on a number of issues, including management of childhood fevers, to correct any misconceptions about these diseases, and to emphasize the importance of prompt and effective treatment of malaria. Distributors and supervisors presented songs, games, and plays that carried messages

about prompt effective treatment of malaria. A number of seminars were held specifically for mothers/caregivers, emphasizing their roles in home management of childhood fevers and covering the following topics:

- » identifying the fever
- » taking decision to treat promptly
- » obtaining the drug prepacks promptly and using them correctly
- » completing treatment
- » understanding the dangers of under- or overdosing
- » deciding when to move to a higher level of treatment (recognition of severe disease).

Whenever there was contact with mothers/caregivers, messages stressed the appropriate treatment of fever (malaria) in children under 5 years of age using the prepackaged drugs. Opportunities for such contact were created through local council meetings, places of worship, school meetings, and similar gatherings. Mothers/caregivers were encouraged to ask questions and this helped to correct many misconceptions.

### *Plate 7.*

COMMUNITY SENSITIZATION SEMINAR IN UGANDA





## CHALLENGES AND LESSONS LEARNT

Preparing all the different strategies is costly and time-consuming. Once the messages were prepared, they had to be tested a number of times before being finalized. Use of songs and drama required core team members and key implementers to spend time attending rehearsals. To sustain the intervention and ensure that use of prepacks to treat malaria became second nature for the communities, the finalized messages – irrespective of their form – had to be reinforced at every opportunity.

The use of different colours and pictures on the drug prepacks helped caregivers to recognize appropriate treatment. Simple and culturally sensitive messages are easily understood by mothers and caregivers; each has its advantages and disadvantages and these must be taken into consideration in choosing IEC strategies.

*Table 5* summarizes the advantages and disadvantages of the different methods used in the four countries.

*Table 5.*

ADVANTAGES AND DISADVANTAGES OF DIFFERENT IEC APPROACHES, MESSAGES AND MATERIALS

IEC strategy	Message content	Advantages	Challenges
Community meetings/durbars	» Management of childhood fever	» Issues clarified	» Requires large numbers of people
	» Importance of prompt effective treatment	» Face to face, therefore better personal contact	
	» Roles of mothers and drug distributors in home management	» Enhancement of programme	
	» Dangers of malaria		
	» Signs and symptoms of uncomplicated malaria		
	» How to use the prepacks		
	» Questions and answers on management of childhood fevers		
	» Signs of worsening fever, need to refer, where to refer		
Radio spots and jingles	» Where prepacks can be obtained	» Wide coverage achieved	» Where there are no local radio stations people may not have access to this strategy.
	» Cause of malaria	(e.g. children start singing songs)	
	» Prompt treatment for children with fever		
Drama	» Effects of malaria on children	» Holds attention of audience	
	» Dangers of not treating early	» Audience can participate in drama	
	» Report every fever to the to the nearest distributor	» Immediate feedback	
	» Benefits of prompt treatment		

Illustrated calendars	<ul style="list-style-type: none"> <li>» Child lying on bed</li> <li>» Prepacks</li> <li>» Mother administering drugs to seated child</li> <li>» Referral of child who failed to improve</li> </ul>	<ul style="list-style-type: none"> <li>» Always available for reference</li> </ul>	
Posters/treatment charts	<ul style="list-style-type: none"> <li>» Malaria as a major cause of fever</li> <li>» First treatment of fever should be antimalarial</li> <li>» Chloroquine doses for each age group and day of treatment</li> </ul>	<ul style="list-style-type: none"> <li>» Single page</li> <li>» Key messages on treatment regimen</li> <li>» Instant visual Impression</li> <li>» Ease of reference</li> </ul>	<ul style="list-style-type: none"> <li>» May become faded or destroyed, especially by weather if displayed outdoors</li> <li>» Some messages may not be understood by illiterate people</li> </ul>
Flipcharts	<ul style="list-style-type: none"> <li>» Malaria cycle showing transmission and breeding sites</li> <li>» Dealing with breeding sites</li> <li>» Signs and symptoms of malaria, including severe malaria, in children</li> <li>» Treatment and management including sponging to reduce fever</li> <li>» Where to obtain prepacks</li> <li>» Referrals</li> </ul>	<ul style="list-style-type: none"> <li>» Usable in meetings and summarizes everything about malaria</li> </ul>	
T-shirts	<ul style="list-style-type: none"> <li>» Illustrations of prepacks</li> <li>» Drug prepacks treat fevers in children aged 6 months to 5 years</li> <li>» The need for early and appropriate treatment and compliance by care givers</li> </ul>	<ul style="list-style-type: none"> <li>» Acted as incentives to drug distributors</li> </ul>	
Game – Snakes and Ladders	<ul style="list-style-type: none"> <li>» Contained prepacks</li> <li>» Described the prepacks based on different age groups</li> <li>» Assured players that, used properly, prepacks will make a sick child well again</li> </ul>		
Short stories	<ul style="list-style-type: none"> <li>» Same as drama</li> </ul>		
Individual counselling	<ul style="list-style-type: none"> <li>» The need for early and appropriate treatment and compliance by care givers</li> </ul>	<ul style="list-style-type: none"> <li>» Used when mothers and caregivers went to buy medicines</li> <li>» Encouraged mothers to complete dose</li> <li>» Take to health facility any child who fails to improve</li> </ul>	

#### 4.4 Step 4: Dispensing and use of drugs at community level

Once distributors had been selected and trained and IEC activities had been started, distributors were given boxes containing their drugs, notebooks, tally sheets, and stationery items, which allowed them to begin work. Drugs were dispensed over a period of 12–18 months; results of their use were monitored and evaluated.

The positive experiences with the use of the prepacks, coupled with intensive community education, contributed to the prompt and appropriate treatment of most of the children who had malaria during the period of the intervention; *see Table 6.*

*Table 6.*

EXPERIENCE WITH USE OF DRUGS AND COMPLIANCE IN THE FOUR COUNTRIES

Experience and compliance	Baseline	Post-intervention
<b>BURKINA FASO<sup>A</sup></b>		
Sought care within 24 hours	21%	54%
Appropriate treatment	25%	46%
Compliance with prepack	NA	59%
<b>GHANA</b>		
Sought care within 24 hours	NA	77%
Appropriate treatment	67.8%	92%
Compliance with prepack	NA	93%
<b>NIGERIA</b>		
Sought care within 24 hours	67%	96.2%
Appropriate treatment	37.9%	49%
Compliance with prepack	NA	15%
<b>UGANDA</b>		
Sought care within 24 hours	66.3%	79.6%
Appropriate treatment	26.4%	69.7%
Compliance with prepack	NA	97.4%

<sup>A</sup> THE INFORMATION FOR BURKINA FASO IS FROM ANOTHER STUDY (PAGNONI ET AL., 1997), PREDATING IMPLEMENTATION OF THE PRESENT STUDY, THAT WAS CONCERNED WITH COMPLIANCE WITH PREPACKS. THE OTHER THREE COUNTRIES HAD NO SUCH INFORMATION IN ADVANCE OF THE PRESENT STUDY AND THEREFORE HAD TO COLLECT THE INFORMATION FROM SCRATCH.



## BURKINA FASO

**Over the 2 years of the intervention, 1806/3202** children said to have suffered a fever attack during the previous 30 days were treated by their mothers/caregivers with the prepackaged antimalarial drugs. The overall compliance rate is therefore 56.4%; *see Table 7*.

Of the children who have been treated with PPAMs, 59% received the drugs over the prescribed 3-day period; in 17.8% of cases the administration of drugs was stopped earlier, and in 23.2% of cases administration was extended beyond the third day.

Among the children treated with PPAMs, 51.8% received the correct age-specific dosage, while 31% were treated with a unit intended for a younger child (resulting in an inadequate dose) and 17.2% with a unit intended for an older child (resulting in an overdose).

*Table 7.*

DISTRIBUTION AND USE OF PREPACKS IN BURKINA FASO

Age group	Use of prepackaged drugs		Total
	Yes	No	
0–6 months	140 (53.8%)	120 (46.2%)	260
7–11 months	210 (58.7%)	148 (41.3%)	358
1–3 years	1027 (56%)	806 (44%)	1833
4–6 years	429 (57.1%)	322 (42.9%)	751
<i>Total</i>	<i>1806 (56.4%)</i>	<i>1396 (43.6%)</i>	<i>3202</i>

## GHANA

**When a CBA identified a patient, he or she administered the first dose of the prepacks as a demonstration to the mother/caregiver and then handed over the rest of the drugs for treatment to continue at home. There was subsequent follow-up of the mother/caregiver to ensure that she had complied with the treatment.**

The DHMT visited the CBAs twice a week to check compliance among mothers/carers, to check – and replenish if necessary – the stock of drugs, and to check each CBA’s records for accuracy and consistency. Each

month, the field supervisors collected fever registers (see Figure 9). for data entry at the DHMT office; only a few registers were collected each time, on a rotational basis. All CBAs also had notebooks in which to record children seen without the fever register: records were transferred on return of the registers.

When community members were asked if they had ever used the prepacks, the response was quite positive – see Table 8.

*Figure 9.*

FEVER REGISTER USED IN GHANA

No.	Name of mother	Child's name	Date of birth	Sex	House no.	FEVER ONLY			FEVER + FAST BREATHING			Remarks
						Episode	Onset	Action	Episode	Onset	Action	

*Table 8.*

USE OF PREPACKS IN THE VARIOUS DISTRICTS IN GHANA

Response	Gomoa	Ejisu-Juaben	Wa
Yes	381 (76.2%)	323 (64.6%)	387 (77.4%)
No	115 (23.0%)	170 (34.0%)	93 (18.6%)
Don't know	4 (0.8%)	7 (1.4%)	20 (4.0%)
<i>Total</i>	<i>500</i>	<i>500</i>	<i>500</i>

Below are two examples of typical days in the lives of drug distributors in Ghana

**EXAMPLE 1 – EXISTING DRUG DISTRIBUTOR WHO OWNS A CHEMICAL SHOP (EJISU DISTRICT)**

The CBA begins her day at 05:00. By 06:00 am she is occupied with sweeping, cleaning and tidying of her house. She then tends to the needs of her household members – bathing the children, getting them ready for school, etc. Afterward she goes to the chemical shop that is her livelihood, but she is ready to dispense drugs on call or when she is consulted.

At sunset she goes to the local market to buy foodstuffs and prepares supper for her family. After supper she returns to the shop. She may use some of the time for follow-up of carers who are administering drugs to their sick children. She takes stock of the prepacks and then returns home from the shop at 21:00.

**EXAMPLE 2 – NEWLY APPOINTED DRUG DISTRIBUTORS (GOMOA DISTRICT)**

Most of the CBAs rise at 05:00 and do their household chores. Those with patients will go to visit them. Some CBAs who are farmers go to work on their farms; the teachers and church elders go to their respective places of work; pastors are occupied with prayer meetings and healing services from dawn until 08:00. The farmers return to their houses at 15:30 to wait for patients, remaining there until the evening. If they have no visiting patients, they take their drugs and visit people in the community, teaching them about fevers, the signs and symptoms of fever, and the action they should take when their children become ill.

Other CBAs stay at home until 12:00 before going to their farms, waiting for patients and making time to visit those who are taking the drugs. At times they may remain at home all day, attending to the sick who come to them for medication.

According to one mother, *“Adur no agye hen nkwah”* – the drugs have saved us – because the children responded very well to the medication. Another mother in Gomoa district expressed the view that the drugs were very good because:

*“My child’s only sickness is fever, but ever since I used the drugs on my child, I have not sent him to the hospital again.”*

A mother from Ejisu district said:

*“At first when the child had fever we sponged the child and gave enema, but now they have brought some drugs into the community for fever, so we go to the CBA for those.”*

*“You have brought us some medicine, so if my child is sick, I only walk to the CBA for medication.”*

Drug distributors were given 20 000 cedis (US\$ 4.00) each – 10 000 cedis as per-diem allowance for the training plus another 2000 cedis per month for the work done. They felt that the monthly allowance was inadequate and should be increased to 20 000 cedis per month; they also requested other resources such as portable radio set, lantern and flashlight, raincoats and boots, bicycles and spare parts, T-shirts.

## NIGERIA

**After training as drug distributors, the PMVs** continued to make rounds of the communities, dispensing their drugs as usual; other distributors (farmers, teachers, etc.) received clients at home. During the 12 months that followed training, 4105 units of project drugs – chloroquine in doses for children aged 6–11 months and for children aged 1–6 years – were sold, making an average of 342 units per month. Sales were monitored: if feedback indicated to the programme staff that sales had dipped, health education efforts were increased. On one such occasion, the team unanimously decided to reduce the price of drugs as a means of boosting sales.

The most common first choice of distributor was the PMV (43.2%). The use of VHWs increased from 3.1% at the time of the situation analysis to 8.4% at follow-up. Indeed, VHWs were frequently mentioned in follow-up focus group discussions as sources of information on the project drugs. The use of appropriate drugs increased during the project, compared with baseline levels: there was a 12% increase in the appropriateness of treatment given to children who suffered high fevers, but compliance was only 15%.

In the three sites where the drugs were dispensed, community members and distributors shared both positive and negative experiences:

*“The response of people in the community has been very encouraging, and they have been giving good commendation on the drug efficacy.” (Distributor, Mabaugu)*

*“People now call me doctor because of the distribution of the drug.” (Distributor, Indere)*

*“The problem I have with this distribution is that people don't come to buy the drugs. Sometimes we can stay one or two months before one patient is attended to.” (Distributor, Ukehe)*

*“It is easy for those who are buying it to get because if it is not available with one seller, the other one will have it.” (Community leader, Indere)*

As in Burkina Faso and Ghana, incentives were an issue in Nigeria. Drug distributors received 20% of the prepack price as an incentive but this was considered inappropriate and was one of the reasons for high attrition among the drug vendors.

## UGANDA

**After training, distributors were introduced to their communities during the local council meetings, the prepackaged drugs were delivered to the community, and the distributors were given letters of acknowledgement.**

During the intervention period, 20 467 febrile episodes were treated. Of the 18 413 records that provided complete information, 12 247 (66.5%) showed that treatment was sought within 24 hours of fever onset; 486 (2.6%) of these episodes were perceived to be severe at presentation to the DDs. At the end of the intervention, a total of 944 out of 1636 (57.7%) caregivers had used the prepacks for treatment of the most recent fever episode; 919 of them (97.4%) reported full compliance with treatment (1 tablet per day for 3 days).

Communities showed considerable enthusiasm for these interventions and felt that the prepackaged chloroquine readily available at community level had reduced the malaria burden in under-fives. They observed that these children were getting fewer fever (malaria) episodes and that the severe forms of fever had decreased in frequency. Communities were generally happy with the services given by the DDs who were perceived to be friendly, kind, cooperative, and always available to offer services, even late at night.

Many people reported their positive experiences:

*“When we treat these children with Musujjaquin, we visit them at home to see if they have improved. If we find that a child has not improved we urge the mother to take her/him to a trained health worker (omusawo omutendeke) so that thorough examination is done and strong treatment is given. We do not want to see any more children dying in our villages when we can do something.” (Drug distributor, Butenga Masaka)*

*“This mother brought her child who was very sick. I told her I could only treat children who were not very sick, but she pleaded with me to assist her, so I crashed one tablet and we managed to give it to the child. I emphasized to her that she still had to take the child to a health unit to get more intense treatment. Because this child looked really very sick, later in the evening, I went to check on whether they had gone to hospital. I remained worried because I thought this kid was going to die. Two days later I went to their home, they were still in hospital, but the child had improved. I felt very happy because I had helped to save this child's life.” (Drug distributor, Mpigi district)*

*“DDs are good, because they live in the same village as us, they are our people and they do not make life difficult for us. They work well and treat us well. They are not like some health workers, where you go and they look down on you, especially if they do not know you, they can even shout at you. With the DDs, you can ask them to act quickly, whereas in the health units, you cannot do that.” (Mother, Butenga Musaka)*

However, a father from Mubenda Sekanyonyi tried to explain how well he had used the drugs for a child outside the age range:

*“Because I trust Musujjaquin, one time my nine years old son caught fever, I thought of going to spend endless hours at the health centre and I resented it so, I used two packets of Musujjaquin (green) and he got cured quickly without any problem.”*

This called for further education of the distributors during regular progress meetings.



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A particular problem was that the DDs had high expectations in terms of salary, transport, and other benefits for the services they provided. They felt that they were devoting a lot of time to sick children, visiting them at home as well as keeping the records. They also felt that, to offer good services, they needed to be at home most of the time and this reduced the time they might otherwise have spent in income-generating activities.

#### **CHALLENGES AND LESSONS LEARNT**

##### *COLLECTIVE RESPONSIBILITY AND SENSE OF PATRIOTISM*

As a result of the method of selection, drug distributors felt a sense of responsibility for the health of the children in the community and many were wholly dedicated to ensuring that the children got well. In a few cases, however, the distributors – especially the existing distributors – felt no obligation to follow up on the sick children since this was not their normal practice and they received nothing extra for doing so.

##### *THE NEED FOR PROMPT REFERRAL*

Although distributors had been educated to refer very sick children, there were instances when mothers decided against this and the distributors treated the children. This practice is dangerous. Distributors *must* insist that mothers/caregivers take very sick children to the nearest health facility. If a severely ill child had died as a result of the mother's insistence on using the prepackaged drugs, the death could be blamed on the distributor. Both the distributor's credibility and that of the drug would have been seriously undermined.

##### *PROXIMITY AND STAFF ATTITUDE*

One of the major obstacles to health delivery in Africa has been access to care and the attitude of health care personnel. The proximity of the distributors to the communities and the fact that they were selected on the basis of the communities' own criteria meant that people felt at ease visiting them, sometimes not to obtain a prepack but just to talk.



#### *REPACKING THE PREPACKS*

There were some instances of tampering with the prepacks in order to use them for children outside the intended age range. This can lead to under- or overdosing and was one of the main reasons why the prepacks used in the intervention carried illustrations of the categories of children who should take them. Tampering with or misusing the packs is dangerous, and the dangers should be regularly emphasized during IEC activities. Neither the distributor nor the user should ever try to tamper with the set dosages in the prepacks.

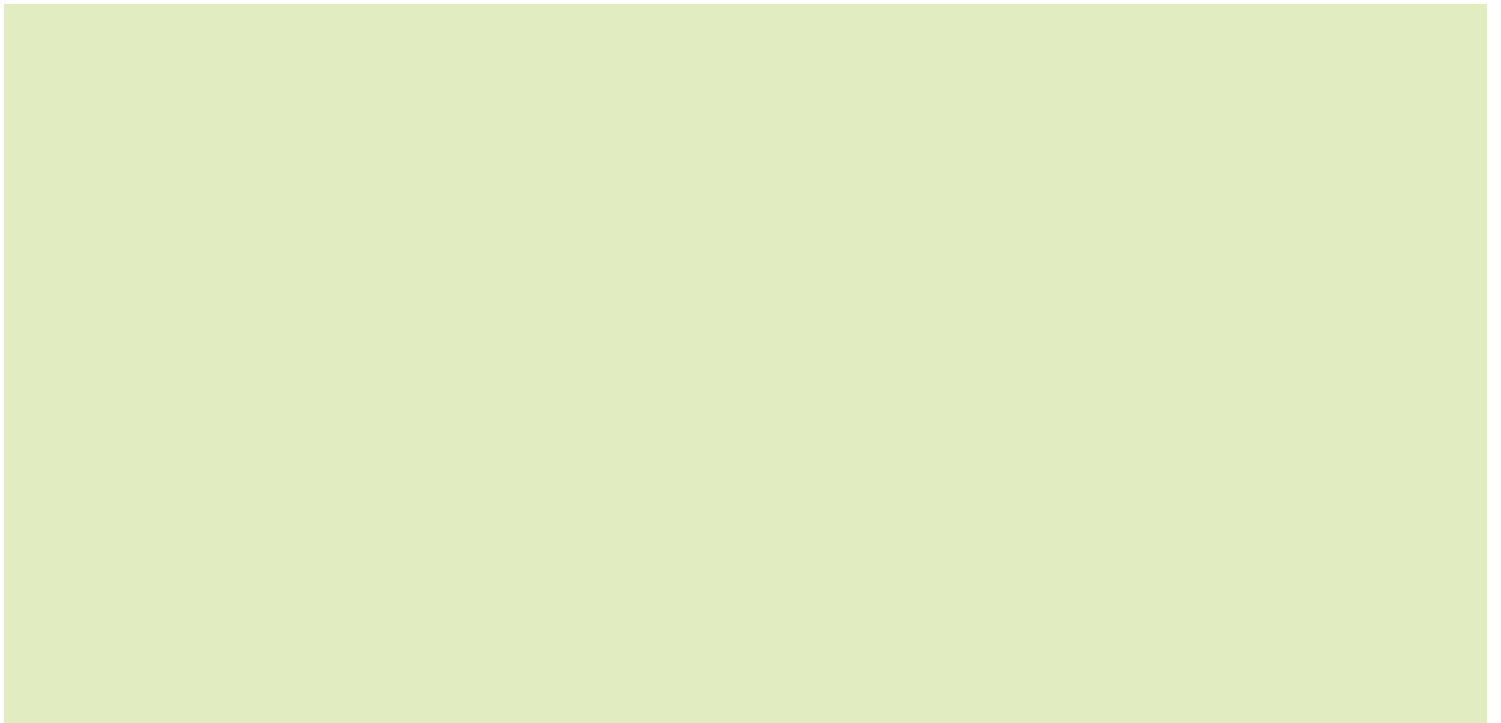
#### *DRUG EFFECTIVENESS AND AVAILABILITY*

The effectiveness of prepacks has been widely documented and was demonstrated again in the four countries documented here. Community members remarked on the continuous availability of prepacks from distributors – in contrast to health facilities that sometimes issue prescriptions rather than drugs. Testimonies from caregivers of their positive experiences with use of the drugs could lend valuable weight to IEC campaigns.

#### *INCENTIVES AND REMUNERATION*

The issue of incentives and remuneration, which was raised repeatedly in all the four countries, is not a new one in the context of community-based activities (WHO, 2004) and should be given careful consideration from the outset. It is difficult to make hard and fast recommendations – such matters need to be agreed upon with the various communities in which the intervention or activity is implemented. Experiences from the four countries discussed indicate that the incentives can be in cash or kind. In a study of the use of rectal artesunate for severely ill children under 5 years of age (Gyapong et al., 2005<sup>1</sup>), the core team, the district health management team, and the malaria control programme manager together agreed to supply drug distributors with bednets from the district store to sell at a commission. This not only provided the distributors with additional benefits, but also helped the core team to send insecticide-treated bednets to areas that would have been difficult for health staff to reach.

<sup>1</sup> GYAPONG M ET AL. (2005). COMMUNITY UNDERSTANDING AND TREATMENT SEEKING FOR SEVERE MALARIA IN THE DNGME WEST DISTRICT (UNPUBLISHED REPORT).





## 5. MONITORING AND EVALUATION

Monitoring is a management tool for tracking the progress or the implementation of a programme (WHO, 2004). It is a continuous process of information gathering. Monitoring activities are designed to keep track of resources available and used and the quality and quantity of operations carried out during each phase of an implementation process in an effort to achieve programme objectives (Varkevisser, Padmanathan & Brownlee, 2003)

Monitoring and evaluation in the four countries were carried out continuously and at all levels of implementation of health services. Issues that were unclear during the intervention were further investigated as part of the monitoring process, and the results were used as the basis for further improvement of the intervention. Monitoring all activities carried out during the implementation phase is critical to:

- » assess whether objectives are being met
- » identify problems arising during the implementation and devise timely solutions
- » avoid reoccurrence of problems
- » reinforce positive attitudes and share experiences with other team members
- » modify strategies that are not working.

The key activities that were monitored (*see also Table 9*) included:

- » distributor performance
- » recognition of early signs and prompt treatment by caregivers and distributors
- » adherence to treatment regimen by caregivers and distributors
- » recognition of danger signs and prompt referral
- » availability of drugs/distributors at community level
- » adequacy/effectiveness of IEC messages.

Table 9.

ACTIVITIES MONITORED BY VARIOUS CATEGORIES OF PEOPLE

Level	Supervisor	Issues covered
District level	Central programme coordinator	<ul style="list-style-type: none"> <li>» Availability of drugs and stock levels</li> <li>» Evidence of support visit to implementing level</li> <li>» Evidence that problems identified have been addressed</li> </ul>
Sub-district level	District supervisor	<ul style="list-style-type: none"> <li>» Availability of drugs; drug stock levels</li> <li>» Evidence of support visit to implementing level</li> <li>» Evidence that problems identified have been addressed</li> <li>» General satisfaction with prepacks</li> <li>» Whether drugs are being sold and properly accounted for</li> <li>» Whether drug distributors are at post and working.</li> </ul>
Drug distributor level	Sub-district/sub-county/parish supervisor	<ul style="list-style-type: none"> <li>» Mothers/caregivers seeking prepacks for sick children promptly from distributors</li> <li>» Whether distributors have a constant supply of drugs</li> <li>» Whether distributors are available and working</li> <li>» Whether children given prepacks are cured of malaria</li> <li>» General satisfaction with prepacks</li> <li>» Side-effects noted after use of prepacks</li> <li>» Prompt referral of severely sick children</li> <li>» Adequacy of drug storage conditions</li> <li>» Adequacy and effectiveness of IEC messages</li> </ul>
Mother/caregiver level	Drug distributor and from the district health system and the core team	<ul style="list-style-type: none"> <li>» Mothers following treatment regimen</li> <li>» Mothers know location of distributor</li> <li>» Mothers aware of danger signs</li> <li>» Mothers adhering to referrals</li> <li>» General satisfaction of mothers with the programme</li> </ul>

## BURKINA FASO

**The health centre covering the study area was** charged with ensuring that the drugs reached the distributors. Nurses supervised drug distributors in their catchment areas using the standard district reporting system. Trained nurses monitored, and took blood slides from, children referred to the health facility. The use of drugs at the dispensary level was accurately recorded in books with different labels. The individual in charge of the drug store did the stocktaking and was in turn supervised by the research team. The quantity of drugs given to each CHW was recorded on specific forms and checked against the amount of money brought back by the CHW. The money generated through this activity was kept distinct from the general accounts of the health centre and used to replenish the project drugs; there was no special case-reporting system for this activity. The nurse in charge of the health centre made monthly reports to the District Medical Officer as is normal practice in the health system.

## GHANA

**The technical advisory committee monitored the** whole project twice a year through review meetings with the research team. Field supervisors oversaw the sales of drug. One district used the exemption policy and recouped money from the MoH; this was because children under five are exempt from health care charges. A supervisory checklist was used for monitoring the distributors, and a follow-up form was given to mothers/caregivers to determine their use of, and satisfaction with, the treatment. Referral forms were issued by the drug distributors to enable mothers to send to the health facility any children who did not recover after taking the drugs. The health facility completed a section of the referral form, which was returned to the project. Supervisors carried out stocktaking during each visit and collected monies from the sale of drugs. Records were sent every two weeks by drug distributors to the supervisors; the research team collected reports monthly.

## NIGERIA

**The research team monitored the whole project** three times a year through review meetings with the research team. They also took stock on a regular basis, replenishing drugs whenever necessary. Primary health care staff supervised the implementation of the project and collaborated with field assistants to monitor drug sales of project drugs and compliance with treatment. Involvement of primary health care staff in the monitoring process ensured the referral of severely ill children. Serious cases were referred to the hospital within the community and drug distributors monitored outcomes, reporting to the project staff. Distributors also took stock on a regular basis and kept monthly return forms, which were collected regularly by the research assistants. Drug use and satisfaction forms given to mothers were used to monitor drug preferences and use as well as the effects of the drugs on the children.

## UGANDA

**The purpose of monitoring was to reinforce positive** practices, identify difficulties in drug distribution, and help to solve any other problems. The central and field teams met monthly to evaluate progress with interventions. At these meetings, each DD presented summary records for the previous month for discussion. In addition, the parish supervisors and sub-county coordinators were able to use the opportunity to provide further instruction to DDs based on their individual assessments. The quality of service provided by DDs was also monitored through observations and role-play.

Using a checklist, DDs monitored use of the prepacks by mothers. Specifically, they asked whether the mothers adhered to the instructions, what the effects of the drugs were, and whether there had been any adverse reactions. Monitoring of DDs by sub-county coordinators and parish supervisors included checks on their drug sales.

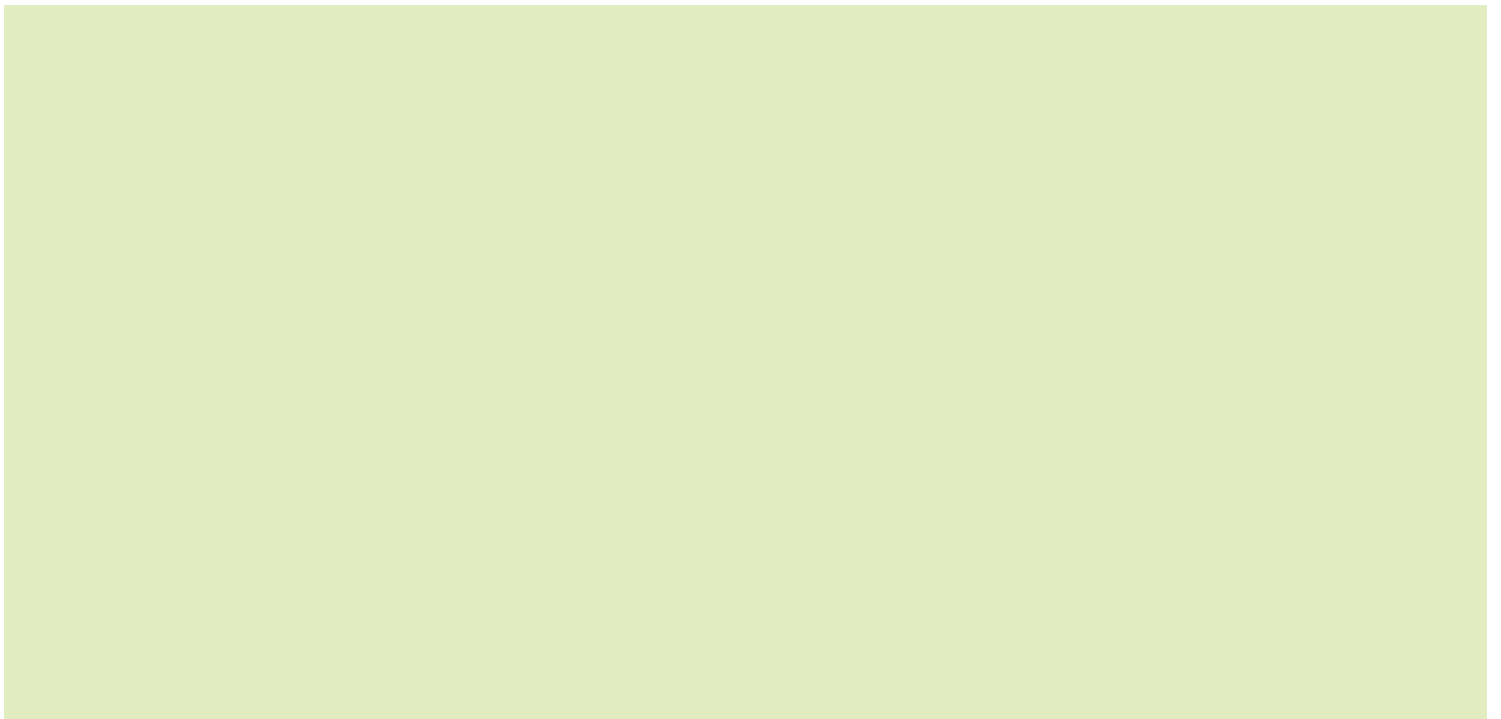


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## CHALLENGES AND LESSONS LEARNT

The main challenge of monitoring activities was the additional workload for health workers at the district and sub-district levels who supervised the activities of the drug distributors, which meant that they were unable to carry out these activities as frequently as necessary. The solution was to appoint research assistants from the communities – and this entailed extra costs. Completion of the monitoring forms was another challenge, particularly for the distributors, and was one of the reasons why there were demands for compensation. It is worthy of note that communities in which there was effective supervision had better output in terms of compliance and appropriateness of treatment. In view of the amount of recording involved in the monitoring process, it is clearly important that at least one of the distributors is literate; it would also be valuable to have simpler tools that could be included in the routine monitoring of activities at the district level.





## 6. SUMMARY AND CONCLUSIONS

This publication documents the processes involved in the implementation of home management of malaria in four African countries. It is intended to complement other TDR documents dealing with various aspects of the HMM strategy.

The three key phases are pre-intervention, intervention, and monitoring and evaluation. Each of the countries undertook 10 steps designed to achieve the objective of increasing the extent of early and appropriate treatment of childhood fevers at household and community levels. Each country established a core working group, set objectives, and held consultations with key stakeholders from community level through to national level. The teams conducted a situation analysis and went on to select drug distributors. The intervention processes included procurement of drugs, preparation of training manuals, training of key implementers, and then the actual dispensing and use of the drugs at the community level.

The results of these successful projects have been published in peer-reviewed journals (Salako et al., 2001; Sirima et al., 2003) and have been widely quoted. Successes can be attributed to the painstaking processes involved in putting the interventions in place in the various countries. The challenges encountered by the teams at each step, and the means they found to meet those challenges, are worthy of study by any country wanting to move ahead with home management of malaria.

These strategies were put in place at a time when chloroquine was the first-line drug in the four countries. With the shift in drug policy to artemisinin-based combination therapies (ACTs), countries will face fresh challenges in deploying these new drugs at community level; nevertheless, the implementation steps described in this manual and the lessons learned provide a valuable base on which to build.





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## ANNEXE 1

### EARLY TREATMENT OF CHILDHOOD FEVERS WITH PREPACKAGED ANTIMALARIAL DRUGS IN THE HOME REDUCES SEVERE MALARIA MORBIDITY IN BURKINA FASO

SB SIRIMA,<sup>1</sup> A KONATÉ,<sup>1</sup> AB TIONO,<sup>1</sup> N CONVELBO,<sup>1</sup> S COUSENS,<sup>2</sup> F PAGNONI<sup>1,3</sup>

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#### SUMMARY

In rural, malaria-endemic Burkina Faso, we evaluated the impact of the use of prepackaged antimalarial drugs (PPAM), by mothers in the home, on the progression of disease in children from uncomplicated fever to severe malaria. In each village of one province, a core group of opinion leaders (mainly older mothers) was trained in the management of uncomplicated malaria, including the administration of PPAM. Full courses of antimalarial (chloroquine) and antipyretic (aspirin) drugs were packaged in age-specific bags and made widely available through community health workers who were supplied through the existing drug distribution system. Drugs were sold under a cost-recovery scheme. Local schoolteachers conducted surveys in a random sample of 32 villages at the end of the high transmission seasons in 1998 and 1999. Disease history and the treatment received were investigated for all children under the age of 6 years having suffered from a fever episode in the previous 4 weeks. “Uncomplicated malaria” was defined as every episode of fever and “severe malaria” as every episode of fever followed by convulsions or loss of consciousness. During the study period, 56% [95% confidence interval (CI) 50–62%] of 3202 fever episodes in children under 6 years of age were treated promptly by mothers with the prepackaged drugs made available by the study. A total of 59% of

children receiving PPAM were reported to have received the drugs over the prescribed 3-day period, while 52% received the correct age-specific dose. PPAM use was similar among literate (61%) and non-literate mothers (55%) ( $P = 0.08$ ). The overall reported risk of developing severe malaria was 8%. This risk was lower in children treated with PPAM (5%) than in children not treated with PPAM (11%) (risk ratio = 0.47; 95% CI 0.37, 0.60;  $P < 0.0001$ ). This estimate of the impact of PPAM was largely unchanged when account was taken of potential confounding by age, sex, maternal literacy status, year or village. Our findings support the view that, after appropriate training and with adequately packaged drugs made available, mothers can recognize and treat promptly and correctly malarial episodes in their children and, by doing so, reduce the incidence of severe disease.

**KEYWORDS:** prepackaged antimalarial drugs, malaria morbidity, children, child mortality, self-treatment, Burkina Faso

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**TREATMENT OF CHILDHOOD FEVERS AND OTHER ILLNESSES IN THREE RURAL NIGERIAN COMMUNITIES**

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76 The seeking of healthcare for childhood illnesses was studied in three rural Nigerian communities of approximately 10 000 population each. The aim was to provide a baseline understanding of illness behaviour on which to build a programme for the promotion of prepackaged chloroquine and co-trimoxazole for early and appropriate treatment of childhood fevers at the community level. A total of 3117 parents of children who had been ill during the 2 weeks prior to interview responded to questions about the nature of the illness and the actions taken. Local illness terms were elicited, and the most prevalent recent illness and the actions taken. Local illness terms were elicited, and the most prevalent recent illnesses were “hot body” (43.9%), malaria, known as iba, (17.7%), and cough (7.4%). The most common form of first-line treatment was drugs from a patent medicine

vendor or drug hawker (49.6%). Only 3.6% did nothing. Most who sought care (77.5%) were satisfied with their first line of action, and did not seek further treatment. The average cost of an illness episode was less than US\$ 2.00 with a median of US\$ 1.00. Specifically, chloroquine tablets cost an average of US 0.29 per course. Analysis found a configuration of signs and symptoms associated with chloroquine use, to include perception of the child having malaria, high temperature and loss of appetite. The configuration positively associated with antibiotic use consisted of cough and difficult breathing. The ability of the child's caregivers, both parental and professional, to make these distinctions in medication use will provide the foundation for health education in the promotion of appropriate early treatment of childhood fevers in the three study sites.

**EARLY APPROPRIATE HOME MANAGEMENT OF FEVERS IN CHILDREN AGED 6 MONTHS TO 6 YEARS IN GHANA**

ENL BROWNE (PRINCIPAL INVESTIGATOR)

[Reproduced from: *Tropical disease research: results portfolio 3*. Geneva, UNDP/World Bank/WHO Special Programme for Research and Training in Tropical Diseases, 2002 (TDR Final Report Series 2001/020.)]

Trained volunteers can use prepackaged drugs to effectively treat African children with fever within 24 hours of onset of illness. Community-based agents can provide effective near-home treatment. Prepacks were widely acceptable and greatly improved health-seeking behaviour of mothers and carers. Over 90% of those using antimalarial prepacks complied with treatment. Home visits and follow-up, rather than availability, led to effective use and compliance. A good IEC programme resulted in improved care. The findings are causing national health services to review their care delivery systems and products.

Most children in rural Africa have no contact with clinical services that can offer appropriate diagnosis and drugs, and there is little prospect of substantial change in the near future. The majority of childhood febrile illnesses continue to be treated at home and 50–70% of children that die never come in contact with modern health services. In Burkina Faso, Ghana, Nigeria and Uganda, multi-site studies developed and piloted a set of interventions for early, appropriate home management of fevers in preschool children, aimed at providing at least 60% of children with appropriate treatment within 24 hours of onset of symptoms.

Interventions in the sites (each of about 10 000 population) consisted of prepackaging of chloroquine and co-trimoxazole (separately in unit doses), establishment of a network of community-based agents (CBAs) who were trained to treat children with the drugs, and an information, education and communication (IEC) programme focusing on the whole community.

Other activities included supply management to ensure CBAs always had ample drugs, supervision for quality assurance and monitoring and evaluation. In Ghana, chloroquine was used to treat children with uncomplicated malaria (fever but no other complications), in line with national treatment guidelines. Prepacks were produced by a local pharmaceutical company in two forms; a white pack with an image of a crawling infant (for ages 6–11 months) containing 75 mg base of chloroquine, to be given once per day for 3 days, and one (yellow, with the image of a walking child) for children up to 6 years, containing the standard 150 mg base of chloroquine, to be given once daily for 3 days. The treatment regimen conformed with national guidelines, except for the 75-mg tablet which was produced in Ghana for the first time. Infants received either syrups or pieces of the standard tablet.

Children who, as well as fever, had symptoms suggestive of acute respiratory infections received co-trimoxazole in addition to chloroquine (national standard in Ghana). Co-trimoxazole was produced as a pink prepack of 200/40-mg paediatric formulation to be given twice daily for 5 days. To restrict antibiotic use to children at risk of pneumonia, CBAs were trained to count breathing rate and treat infants whose breathing rate was 40 or more per minute and older children breathing faster than 50 breaths per minute (as recommended by Ghana IMCI). Ghana's Ministry of Health is using these results to decide the key elements of their scale-up programme for malaria home management, and is rethinking the use of syrups and loose tablets in care delivery systems.

## DEVELOPING AND PILOTING INTERVENTIONS FOR APPROPRIATE HOME MANAGEMENT OF CHILDHOOD FEVERS IN UGANDA

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[Reproduced from final report of the Ugandan Principal Investigator to TDR.]

### EXECUTIVE SUMMARY

In Uganda as in most African countries malaria is the main cause of morbidity and mortality among children under five. In an attempt to address the issue, a study was conducted to develop and pilot interventions for providing early appropriate home management of childhood fevers and assess their operational feasibility, effectiveness and acceptability.

Qualitative and quantitative methods were used to generate baseline and evaluation data. Information collected at baseline indicated that most mothers/caregivers had appreciable knowledge of illness symptoms and severity but were taking inappropriate treatment actions. The term *musujja* was collectively used to describe signs and symptoms of malaria (fever) and was said to be characterized by; general weakness, child not playing normally, vomiting, loss of appetite, headache (older children) and shivering/rigors. *Musujja* was being used synonymously with malaria and was perceived as the commonest health problem, affecting under-5 children. Hot body was described as the main sign indicative of *musujja* (fever) in under-5s. Convulsions, yellow eyes, extremely hot body, extreme weakness (unable to sit up or stand unsupported) and insufficient blood was perceived as signs of severe fever.

Irrespective of the promptness of the treatment actions, only 31.7% of the first-choice treatment actions for fever at baseline were appropriate; (private clinic 21.5%; government health units 7.2%; NGO health unit 3.0%). The remaining 68.3% consisted of

herbs (23.0%) and self-medication (45.3%). At the end of the study appropriate first-choice treatment actions increased to 69.9% (*Musujjaquin* 49.5%, private clinic 13.5%, government health units 5.9%, NGO health unit 1.0%). This difference in appropriate treatment seeking was statistically significant ( $p < 0.01$ , chi square = 336.33). Use of herbs as first-choice treatment resort reduced from 23.0% at baseline to 13.3% after 18 months of intervention ( $p < 0.01$ , chi square = 38.34).

At baseline 573 out of 864 (66.3%) mothers/caregivers sought and gave treatment for fever for their under-5 children within 24 hours of onset. However, only 26.4% of these promptly sought first-choice treatments were appropriate (private clinics 16.8% government health units 6.6%, NGO health unit 3.0%); the remaining, 73.6% used self-medication and herbs.

After 18 months of interventions, 1302 out of 1636 (79.6%) mothers/caregivers sought treatment within 24 hours of fever onset. A total of 907 out of 1302 (69.7%) mothers/caregivers sought appropriate first-choice treatment for fever within 24 hours of onset. Therefore the proportion of mothers/caregivers seeking treatment within 24 hours of onset of fever increased from 66.3% at baseline to 79.6% ( $p < 0.01$ , chi square = 54.16) after 18 months of interventions. In addition the proportion seeking appropriate care (private clinic, NGO and government health units, *Musujjaquin*) within 24 hours of onset of fever, increased from 26.4% to 69.7%, ( $p$



< 0.01, chi square = 303.55). These findings indicate that the interventions (prepackaged chloroquine, DDs and IEC packages) significantly increased promptness and appropriateness of treatment seeking for fever in under-5s.

In the end of study survey, 275 out of the 1636 (16.8%) respondents reported that they had used non-prepackaged chloroquine for treatment of the most recent fever episode in under-5s. Only 36.4% of these treatments had complied with appropriate dosing (1 tablet per day for 3 days). A total of 944 out of 1636 (57.7%) respondents used Musujaquin for treatment of the most recent fever episode; 919 out of 944 (97.4%) reported full compliance with treatment (1 tablet per day for 3 days). This difference in compliance between the prepackaged and non-prepackaged chloroquine was statistically significant ( $p < 0.01$ , chi square=577.56), an indication that prepackaging improved compliance with treatment schedules.

During the intervention period, over 20 467 febrile episodes were treated by the DDs. Of the 18 413 records with complete information, 12 247 (66.5%) sought treatment within 24 hours of fever onset and 486 (2.6%) of these episodes were perceived to be severe at presentation to the DDs. Children whose treatment was sought after 24 hours of fever onset were more likely to present to the DDs with signs of severe illness than those who presented earlier ( $p < 0.01$ , chi square = 65.76; OR = 2.08, 95% CI = 1.73–2.50). Of the 17 927 episodes which were perceived to be mild at presentation, 17241 (96.2%) improved satisfactorily on Musujaquin treatment, while the rest were referred to a health unit for further management. Children whose treatment was sought after 24 hours from onset of fever were more likely to have unsatisfactory response to treatment than those whose treatment was sought earlier ( $p < 0.01$ , OR = 1.4, 95% CI = 1.20–1.64).

Data from these studies have shown that community resource persons with minimal to moderate education can be trained as drug distributors (DDs) to dispense antimalarials at community level and follow up the treated children at home to check on progress and appropriately advise their mothers.

These studies demonstrated that home based management of fever approach is feasible, acceptable, highly utilized by the communities and resulted in increased prompt appropriate care seeking and increased compliance with appropriate treatment.

Consequently the Ministry of Health in Uganda adopted this strategy and it is being scaled up as the Home Based Management of Fever Strategy.

There is urgent need for action research, to generate information on the safety of this approach and quantify its benefits in terms of impact on disease burden (severe malaria morbidity and malaria mortality in under-5s). In addition, appropriate mechanisms for the private sector involvement need to be studied, specifically focusing on approaches that would accommodate the rural poor. Home-based management of childhood fevers should become a key approach for malaria control in developing countries, especially in Africa.





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