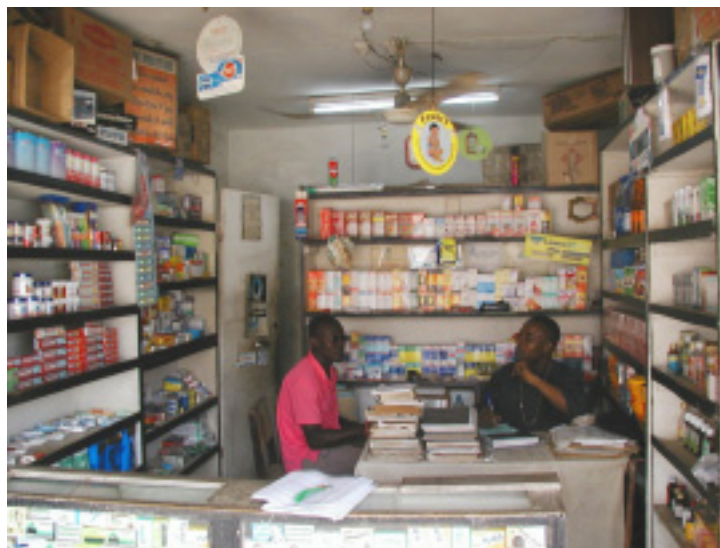


# IMPROVING MANAGEMENT OF CHILDHOOD MALARIA IN NIGERIA AND UGANDA BY IMPROVING PRACTICES OF PATENT MEDICINE VENDORS



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HEALTH COMMUNICATION  
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## **Abstract**

A number of studies from Sub-Saharan African (SSA) have shown that between 15% and 82% of the population choose to first consult private drug shops and informal providers for advice about and assistance with treatment of childhood illnesses. It has also been found for private shops that a large percentage of the drugs provided or dosages given, or both, are inappropriate, indicating the need for innovative and effective approaches to achieve rational prescribing practices. The Ministries of Health in Nigeria and Uganda, in collaboration with partners, designed approaches to utilize private providers for delivery of basic child survival strategies and products to those populations less served by the public sector. These two distinct exploratory models built on lessons from similar efforts in SSA and elsewhere to develop approaches suited to the present situations in Nigeria and Uganda. This report describes the design, implementation, and results of those interventions.

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## ACRONYMS

ARI	Acute Respiratory Infection
BASICS	Basic Support for Institutionalizing Child Survival
BCC	Behavior Change Communication
CAPA	Catchment Area Planning and Action
CAPAC	Catchment Area Planning and Action Committee
CBO	Community-based Organization
CHP	Community Health Promoter
CPS	Chief of Pharmaceutical Services
CQ	Chloroquine
DADI	District Assistant Drug Inspector
DFP	District Focal Person
DPHC	Director of Primary Health Care
ENP	Education, Negotiation, and Persuasion
HCP	Health Communication Partnership (JHU)
ICHCS	Integrated Child Health Cluster Survey
IEC	Information-Education-Communication
IMCI	Integrated Management of Childhood Illness
ITN	Insecticide-treated Bednet
JHU	Johns Hopkins University
LOE	Level of Effort
LGA	Local Government Area
MOH	Ministry of Health
NAFDAC	National Agency for Food and Drug Administration and Control (Nigeria)
NAPPMED	National Association of Patent and Proprietary Medicine Dealers
NGO	Non-governmental Organization
ORS	Oral Rehydration Solution
PHC	Primary Health Center
PMS	Patent Medicine Shop
PMV	Patent Medicine Vendor
PPAM	Pre-packaged Antimalarial
PSI	Population Services International
RBM	Roll Back Malaria
SARA	Support for Analysis and Research in Africa
SFH	Society for Family Health
SMOH	State Ministry of Health
SSA	Sub-Saharan Africa
SP	Sulfadoxine-Pyrimethamine
TBA	Traditional Birth Attendant
TOT	Training of Trainers
UNICEF	United Nations Children's Fund
VCR	Verbal Case Review
VHW	Village Health Worker
WHO	World Health Organization

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## INTRODUCTION

Worldwide, malaria kills more than one million people each year. The vast majority of these fatalities occur in Sub-Saharan Africa (SSA), and most of the victims are children less than five years of age (Snow, Craig, Deichmann, & Marsh, 1999; WHO, 2002). In the context of overall childhood mortality, a synthesis of recent studies and reviews suggests that malaria causes at least 20% of all deaths in children under five in Africa (WHO/UNICEF, 2003).

In April 2000, the international community and the leaders of African nations met at a summit in Abuja, Nigeria and pledged to halve the malaria mortality for Africa's people by 2010 by implementing the proven, effective strategies and actions of the Roll Back Malaria (RBM) Initiative (WHO, 2000a). One of the key strategies endorsed by the Abuja accord was to take actions to ensure that by 2005 at least 60% of those suffering from malaria have prompt access to appropriate and affordable treatment and are able to initiate treatment within 24 hours of the onset of symptoms.

A number of studies from SSA have shown that private drug shops and informal providers are the first choice for treatment of childhood illnesses for between 15% and 73% of the population (Adome, Hardon, & Reynolds-Whyte, 1996; Amin, Marsh, Noor, Ochola, & Snow, 2003; Foster, 1995; Foster, 1991; Hamel, Odhacha, Roberts, & Deming, 2001; Marsh, Mutemi, Muturi, Haaland, Watkins, Otieno, & Marsh, 1999; McCombie, 1996; Mwabu, 1986; Mwenesi, Harpham, & Snow, 1995; Ruebush, Kern, Campbell, & Aloo, 1995; Snow, Peshu, Forster, Mwenesi, & Marsh, 1992; Van der Geest, 1987).

It has also been found that at private shops, a large percentage of the drugs provided or dosages given—or both—are inappropriate (Adome et al., 1996; Amin et al., 2003; Deming, Gayibor, Murphy, Jones, & Karsa, 1989; Marsh et al., 1999; Müller, Traoré, Becher, & Kouyaté, 2003; Salako, Brieger, Afolabi, Umeh, & Agomo, 2001; Slutsker, Chitsulo, Macheso, & Steketee, 1994; Snow et al., 1992), indicating the need for innovative and effective approaches to achieve rational prescribing practices.

Unfortunately, in many countries, interventions that target unqualified drug sellers run into difficulty with national or local health authorities and policies. Patient demands, promotional advertising of alternative therapies, and the drug seller's own needs for profit add to the difficulty of achieving rational prescribing through the commercial private sector (WHO, 1998). For this report, the term patent medicine vendor (PMV) will be used to indicate this group. It includes individuals, owners, or attendants working in private shops that may be registered or unregistered. Typically, these shops may legally sell over-the-counter drugs, and generally they also illegally sell prescription drugs, such as antibiotics, sedatives, etc.

In spite of problems with the low quality of drugs and service, clients go to drug shops rather than to formal sector alternatives because they are more accessible, have drugs, or are more responsive to clients (McCombie, 1996; Ruebush et al., 1995). These shops will undoubtedly continue to be a major source of a variety of drugs for large segments of SSA and represent a resource that could make a significant contribution in many SSA countries to achieving the Abuja targets and other benchmarks such as the Millennium Development Goals.

In light of these facts, the Ministries of Health in Nigeria and Uganda, in collaboration with partners, designed approaches to improve private providers in relation to child survival strategies and products

to those populations less served by the public sector. These two distinct exploratory models built on lessons from similar efforts in SSA and elsewhere to develop approaches suited to the present situations in Nigeria and Uganda. This report describes the design, implementation, and preliminary results of these interventions.

## **PART 1. NIGERIA**

### **BACKGROUND**

Nigeria has an estimated population of 120 million, an infant mortality rate of 110 per 1,000, and an under-five mortality rate of 183 per 1,000 (UNICEF, 2002). High levels of malaria endemicity, parasite resistance to affordable drugs, and inadequate access to treatment facilities help make malaria the leading killer of children, accounting for an estimated 25%–30% of mortality in children under five, or an estimated 300,000 deaths each year. To achieve the Abuja goals, Nigeria must quickly implement strategies to save 150,000 children from death due to malaria.

As in much of Sub-Saharan Africa (SSA), many Nigerian caregivers first seek treatment for fever in children from PMVs, who are established members of the community (Salako, Brieger, Afolabi, Umeh, & Agomo, 2001). PMVs represent an enormous potential asset if the advice and treatments they dispense are consistent with government guidelines and best malaria treatment practices.

A recent, comprehensive review of work in Africa reported that 15 interventions have been implemented to improve the role of PMVs in the management of malaria (Brieger, Unwin, Greer & Meek, 2004). These interventions fell into three general categories: interventions where PMVs were the central focus, those where they were a major focus along with other interventions, and those where they were a partial or minor focus of the intervention. That review indicates that three pertinent PMV initiatives have been implemented in Nigeria, two with PMVs as a major focus of the intervention and a third with PMVs as a minor focus.

The two previous interventions in Nigeria with a major focus on PMVs engaged drug seller associations as partners, but community engagement was minimal. One intervention used eight weekly, two-hour training sessions to increase recognition and appropriate treatment of diarrhea, acute respiratory infection (ARI), and malaria among approximately 50 PMVs. Trained PMVs scored significantly higher in post- versus pre-intervention tests for knowledge about malaria and appropriate practices for malaria management, and also compared with a control group from a nearby town (Oshiname & Brieger, 1992). Another intervention, which focused on small-scale introduction of pre-packaged chloroquine (CQ) by village health workers (VHWs), PMVs, and health clinic staff, reported a 25% increase in use of antimalarials over baseline levels, almost all of which could be attributed to sales of pre-packaged CQ. PMVs were noted to be the most frequent source of treatment before and after the intervention (Brieger, Salako, Umeh, Agomo, Afolabi, & Adeneye, 2002–2003).

The Nigeria intervention described in this report borrowed from two important interventions in Kenya. Studies from Kilifi, Kenya provide strong evidence to support the use of participatory education to improve PMV performance. A preliminary study demonstrated that training 46 shopkeepers from general shops that also sold drugs could improve the delivery of appropriate drugs for malaria. Prior to a series of three, 3-day workshops, shopkeepers simply dispensed antimalarials; but after completing the training program, they gave advice on the types and quantities of drugs to buy, as well as counseling on how to use the drugs at home. They asked questions about the age of the child and the symptoms of their illness during the majority of drug sales. The percentage of shopkeepers providing an adequate dose of CQ significantly increased from 4% to 65% six months after training, and to 75% one year after training. Comparable significant reductions were observed for underdosing as well as for overdosing with CQ (Marsh, et al., 1999).

In a continuation of the Kilifi study, retailers from 259 shops were trained in 1999 and 2000 on causes and signs of malaria, types of antimalarial and antipyretic drugs, indicators of referral, and basic communication skills. This intervention covered the period during a change in first-line drug treatment to sulfadoxine-pyrimethamine (SP) and provided support to the change by promoting uptake of the new drug by retailers. The training was over a four-day period with an annual one-day follow-up. A community information component was used to create awareness of the program, identify trained retailers, and highlight the importance of early treatment. Results showed an increase in adequate doses of antimalarials from less than 5% to over 30%; of these, the percentage taking an adequate dose rose from under 10% to over 60% (Marsh, Mutemi, Willetts, Bayah, Were, Ross, & Marsh, 2004).

Another initiative in Bungoma, Kenya demonstrated the strength of using peer-educators to improve PMV performance (Tavrow, 2003). The cornerstone of the “vendor-to-vendor” program were 73 wholesalers, whose in-store attendants and mobile vendors interacted directly with private vendors, either during the retailers’ visits to wholesalers’ shops or during mobile vendors’ routine visits to the retailers’ shops. A survey conducted prior to the intervention estimated that there were 1,500 private drug outlets in Bungoma, including pharmacies, shops, and kiosks, and that 87% of the shopkeepers had received no training in drug use.

Outreach, consisting of one-on-one encounters, was facilitated by two behavior change communication (BCC) products: a shopkeeper job aid and a client awareness poster, which were given to each retailer. These products, and the outreach agents presenting them, stressed the need to comply with the (then) recently adopted policy of using SP as the first-line drug of choice, and reviewed the clinical symptoms of malaria, treatment advice, and dosage charts for dispensing SP and antipyretics. During the first six months, approximately 450–500 private drug outlets were reached. The study design was not as rigorous as that of the Kilifi initiative, but there were positive results showing increased availability of SP and shopkeeper and pharmacy worker knowledge (Tavrow, 2003).

What is perhaps most interesting is that, by using existing channels of communication to reach drug vendors, these results were attained with a minimum of input. Another strength of this approach is that it makes use of wholesalers who have a vested interest in continually visiting and recruiting new shops, and therefore is able to cope with high turnover. The Bungoma approach was later supplemented by a community-based intervention called “neighbor-to-neighbor,” which used a pyramid distribution of BCC materials to engage and educate the community (Tavrow & Rennie, 2003).

The Nigerian PMV intervention, described in detail below, drew on those Kenya studies and utilized a participatory, peer-educator training approach that focused on key practices for malaria management. A salient and somewhat distinct feature of the Nigerian intervention was the level of cooperation with and reliance on the community. This cooperation was made possible by the existence of strong community organizations called Catchment Area Planning and Action Committees (CAPACs). These committees were cornerstones for Ministry of Health (MOH) child survival interventions in 20 local government areas (LGAs), nine each in Lagos and Kano states and two in Abia State. Because the CAPACs were central to the PMV intervention, a description is provided below.

## **The Catchment Area Planning and Action Committee**

This community-based intervention builds health care partnerships between private and public sector providers and members of the community. Called Catchment Area Planning and Action (CAPA), the strategy focuses on the interface between the most peripheral level of the MOH health care system, the Primary Health Center (PHC), and the community served by the PHC.

CAPA activities focus on reducing morbidity and mortality from some of the leading causes of childhood illness and death including malnutrition, malaria, measles, tetanus, and polio. Within each catchment, which included the population served by the PHC, the Basic Support for Institutionalizing Child Survival Project (BASICS II) worked with the population to identify providers, facilities, and resources; assisted with surveys, assessments, and mapping exercises; and provided essential training and systems strengthening to enhance partnerships between the community, government, and private sector.

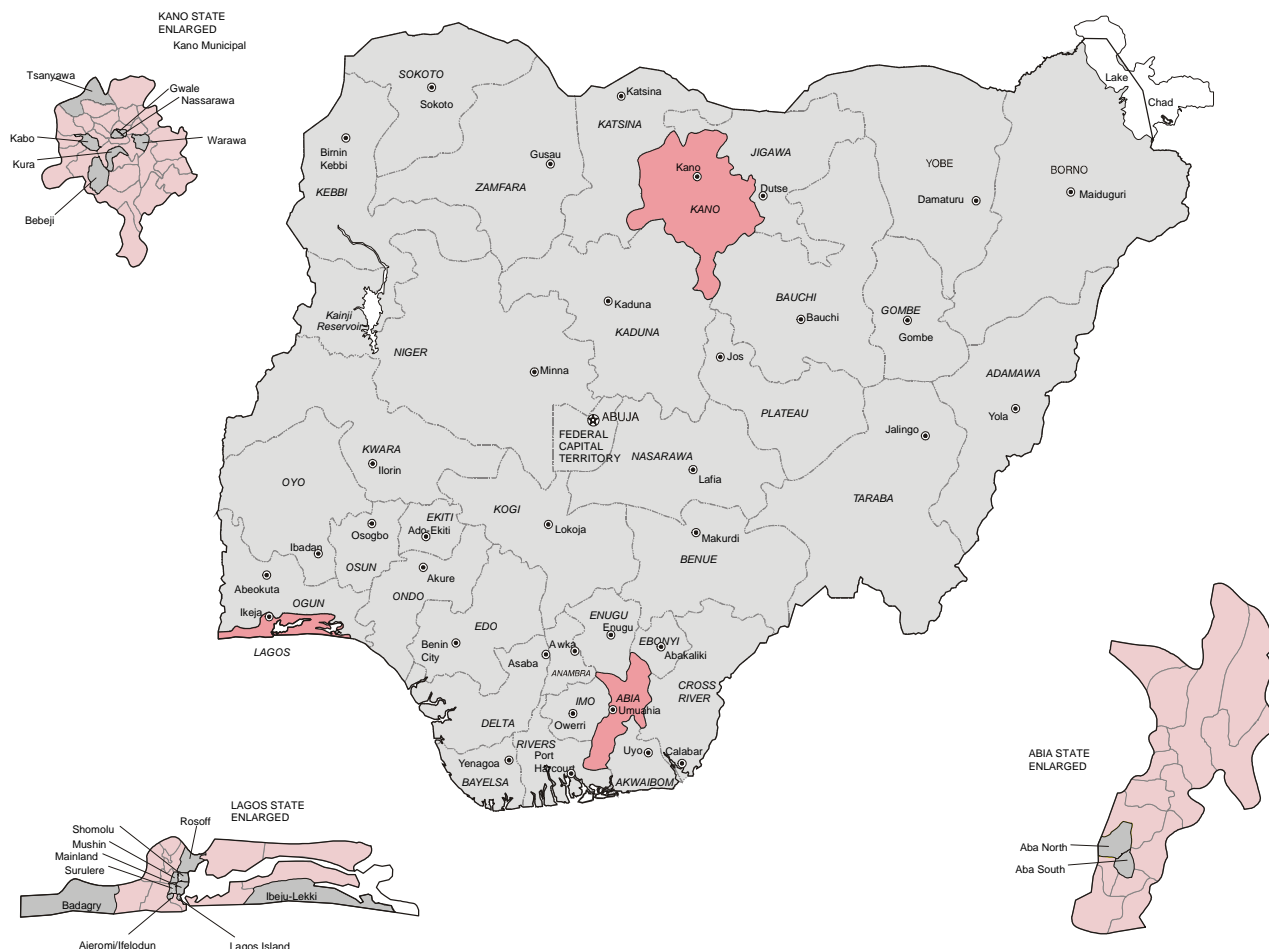
The central organizational unit at the catchment area level is the CAPAC. Comprised of 20–30 community leaders, the CAPAC receives training from multisectoral teams, develops an implementation plan for activities, and advocates for health-related resources for the community it serves. The CAPAC also nominates, selects, and supervises Community Health Promoters (CHPs) to perform home visits and conduct health education at the household level. The CAPAC includes traditional birth attendants (TBAs), PMVs, teachers, influential community members, and other respected residents of the catchment area. Federal and State MOH staff, BASICS II staff, and consultants join with the multisectoral teams to enhance the knowledge and capabilities of CAPAC members to promote selected interventions, including malaria treatment and prevention, breastfeeding, immunization, and vitamin A supplementation.

CHPs are selected by the CAPAC and receive two to three days of training in home-based health promotion that makes use of a series of BCC materials and illustrated training guides. Multisectoral teams conduct training. In addition to training CHPs and public sector health providers from the central to the community level, the CAPA initiative also trained private sector health providers at the community level.

## **Intervention Setting**

The PMV intervention was implemented in Aba South and Aba North, contiguous LGAs located in the southern part of Abia State in southeastern Nigeria (Figure 1). The population of Aba South and Aba North is about 600,000 and 125,000, respectively. The main occupation within the intervention area is commerce, with trading in textiles, machinery, drugs and chemicals, some agricultural products, and oil. Abia State's people are predominantly Christian Igbos; however, because of Abia's rich commercial environment, particularly around Aba, the state has attracted a diverse assortment of Nigerians of other cultures and religions, including Hausas, Effiks, and Yorubas.

**Figure 1. Intervention Areas in Nigeria**



Aba South and Aba North are low-lying areas approximately 75 miles north of Port Harcourt. Flooding is widespread in the rainy season, creating breeding sites for mosquitoes and ideal transmission conditions for malaria. Poor sanitation promotes illnesses such as diarrhea, typhoid, and insect-borne viruses, and rundown roads and infrastructure make service delivery extremely difficult.

The Abia State Ministry of Health (SMOH), located in the state capital, Umuahia, a few miles north of Aba, and its Commissioner of Health, are responsible for supporting the state’s health facilities in all 17 LGAs and for advocating with the Federal Ministry of Health for national government resources. The Commissioner presides over all MOH workers at the State, LGA level, and PHC levels. Each LGA manages the PHCs within its boundaries; Aba South and Aba North manage 15 PHCs (9 and 6, respectively) and their associated CAPACs.

Although there were no accurate estimates of the number of Patent Medicine Shops (PMSs) in these LGAs, casual observation reveals that they are numerous. A census, conducted as part of the operations research for the PMV intervention, identified over 1,000 PMSs in the two LGAs.

## OVERVIEW OF PMV INTERVENTION

The Nigeria intervention was an integrated effort that included coordination of PMV training with the introduction of pre-packaged, age-specific CQ and SP in Abia State. Both of these activities were supported by a comprehensive social marketing and BCC strategy, which included mass media to promote new pre-packaged antimalarials (PPAMs) and the PMVs who displayed shop identifiers from the training. Both of the components also benefited from routine CAPAC and CHP activities on home management of malaria, which is part of the broader MOH malaria strategy.

Key factors contributing to the success of this integrated approach include:

**Strong community collaboration through CAPACs.** Work with CAPACs was an important organizational and conceptual feature of the PMV intervention in Nigeria; it significantly helped educate caregivers about the program and increased PMVs' sense of responsibility for their communities and clients;

**Highly participatory, peer-directed training to improve PMV malaria management and treatment practices.** Training consisted of a one-day, focused session on key practices to improve management of simple and complicated malaria. The use of peer-trainers and a short training helped minimize costs and accelerate implementation;

**A comprehensive social marketing and BCC strategy** that included mass media campaigns and targeted caregivers as well as PMVs;

**Coordination of the PMV training intervention with the introduction and promotion of age-specific PPAMs** in Abia State; and

**Strong collaboration among the various partners.** In addition to community-based collaboration through CAPACs, partnerships were developed with the Nigerian government and local organizations and associations. These included the LGAs in Aba South and Aba North, the Abia SMOH, and the National and Abia State branch of the National Association of Patent and Proprietary Medicine Dealers (NAPPMED). Partnerships among development agencies—BASICS II, Society for Family Health/Population Services International (SFH/PSI), and the Johns Hopkins University/Health Communication Partnership (JHU/HCP)—were also essential.

The overall concept and design of the project were laid out in discussions between the Abia State MOH and BASICS II Nigeria and headquarters' staff. This was expanded to include the headquarters' staff and Nigeria field teams of SFH/PSI and JHU/HCP.

BASICS II played the leading role in the design, logistics, and implementation of the PMV training and in conducting evaluation surveys. HCP played the leading role in development and production of BCC and training materials. And SFH developed and introduced pre-packaged CQ and SP and launched these products in Abia State on July 30, 2003.

The Government of Nigeria, through the National Agency for Food and Drug Administration and Control (NAFDAC), approved the local production and distribution of the new pre-packaged, age-specific CQ and SP on the basis that these products could better ensure the delivery of a high-quality product in the right regimen for the treatment of malaria in children. The simpler, age-specific approach made it more likely that unqualified and poorly trained retailers would provide the correct

dose to children. The advantage of higher compliance using pre-packs for multi-dose regimens like CQ was also considered a positive feature of this product (Yeboah-Antwi, Gyapong, Asare, Barnish, Evans, & Adjei, 2001).

At the time that these products were in development, resistance to CQ was high in regions of Nigeria and was apparently spreading rapidly. Resistance to SP was also on the rise and was alarmingly high in some regions. However, CQ and SP were the Federal Ministry of Health's officially approved first- and second-line drugs, respectively, and the need to move forward with better delivery of antimalarials was an overriding consideration for moving forward with coordinated efforts to train PMVs and launch pre-packaged CQ and SP.

This PPAMs initiative was supported by a mass media campaign, consisting of radio promotion, billboards, and road shows at a number of marketplaces in Aba South and Aba North. Two detailers—individuals who visit retailers to promote products—were fielded in Abia State to coordinate distribution efforts and brief PMVs on product use. The radio campaign was synchronized with the JHU/HCP radio promotion of the PMV intervention that encouraged caregivers to seek treatment for fever or malaria from shops displaying danglers or posters given to PMVs who completed the training.

## **Scope of Report**

This coordinated effort undoubtedly contributed to strong demand among PMVs for the training. Conversely, the training helped achieve rapid acceptance and proper sale and use of PPAMs. However, baseline and post-intervention surveys were not designed to disaggregate the contribution of those components nor of other project-supported activities that promoted home management of malaria through CAPACs and CHPs. Therefore, it is not possible to determine the contribution of PMV training to overall improvement in management of malaria in children.

Other programs that have included community education in conjunction with PMV training have faced the same dilemma (Marsh et al., 2004; Tavrow, 2003; Tavrow & Rennie, 2003). Like those programs, we recommend that interventions to improve PMVs' management of childhood malaria should include a community education component as well as PMV training. Clearly, not all programs will be able to coordinate PMV training with intense promotion of safe, effective PPAMs, but where it is possible, our experience indicates that coordination will be beneficial to the overall program.

This report provides a detailed description of the PMV training component only. It will not include details of the social marketing program to promote PPAMs, nor of the delivery of key health messages for home management of malaria to the community through various BCC strategies such as CAPACs and CHPs.

## **Design and Content of PMV Intervention**

The Nigerian PMV training consisted of seven essential components:

1. *Advocacy and partner coordination;*
2. *PMV census;*
3. *Identification of master and PMV trainers;*
4. *Training of trainers;*
5. *Community-based PMV training;*
6. *Communication support for material and mass media promotion; and*
7. *PMV support.*

Training and BCC materials focused on three key messages: immediate treatment of children under five with fever using an appropriate (preferably pre-packaged) dose of CQ or SP, immediate referral of children with signs of severe illness to a health facility, and use of insecticide-treated bednets (ITNs) to prevent malaria. The content of the training is shown in the box.

### **Training Content**

- Transmission of malaria
- Signs of simple malaria
- Need to immediately treat all children under five with fever with an appropriate antimalarial
- Indicators of referral, including treatment failure and signs of severe illness (convulsions, lethargy/unconsciousness, continuous vomiting, difficulty breathing, severe diarrhea, child refuses to eat or drink)
- Types and doses of antimalarials and antipyretics, with emphasis on preference for pre-packaged antimalarials because of quality and increased compliance
- Importance of following and completing treatment regimen
- Prevention of malaria, emphasizing use of insecticide-treated bednets
- Basic communication skills and use of behavior change communication material provided by partners

The heart of the PMV training was a focused, one-day session that was conducted by PMV trainers and organized and hosted by the community. The key issues around appropriate management of malaria in children under five were built into five questions that each PMV should ask caregivers (see box).

**Questions Patent Medicine Vendors  
Should Ask Caregivers**

1. Is the caregiver seeking treatment or advice for a child?
2. Does the child have a fever?
3. How old is the child?
4. Is there anything else troubling the child?
5. Does the child sleep under an insecticide-treated bednet?

Using a peer-trainer approach had the advantage of lowering costs and, by having numerous trainers, reducing the time required for the intervention. Two concerns about this approach were the uncertainty about PMV trainers' willingness to train other PMVs, and uncertainty about the ability of PMV trainers to deliver a high-quality training. A small incentive, less than US\$10 per training session, was sufficient to motivate all PMV peer-trainers to complete their required number of training sessions. The issue of the quality was addressed by simplifying and standardizing the training. This was done using a series of pre-prepared flip charts and supporting BCC materials including job aids, posters, and information pamphlets for caregivers. BCC materials were designed to enhance counseling and information exchange between caregivers and PMVs.

As part of a social contract, PMVs who completed the training received a certificate that included a pledge to improve the treatment of malaria in children by recommending or selling only appropriate treatment for malaria for all cases of fever in children less than five years of age, and not to sell fake or expired drugs. The certificate, shop stickers, and other BCC materials that could be displayed in the shop were used as identifiers by PMVs to indicate that they had attended the training program. This served both as a motivation for them to attend the training and to fulfill their social contract with the community. The CAPAC was charged with visiting PMV shops on a quarterly basis to reinforce the importance of the pledge.

### **Implementation of PMV Training**

During the course of the intervention, a BASICS II team member conducted an informal review to assess the implementation process and inform program managers of problem areas and ways to improve implementation.

## **IMPLEMENTATION OF PMV INTERVENTION**

Key informant interviews with implementing partner agencies (SFH/PSI, JHU/HCP, and BASICS II) indicated that the collaboration was viewed as mutually beneficial by all three. A common interest in the project, good inter-partner communications, and well- defined roles helped make the collaboration a success.

### **Advocacy and Partner Coordination**

#### *Catchment Area Planning and Action Committee*

Advocacy for involvement of CAPACs was achieved through the CAPA Network Forum, an overarching group comprising the President and Secretary of each of the 15 CAPAC groups in Aba South and Aba North. During ad hoc meetings, the objectives for and approach to improving the ability of community-based PMVs to deal with malaria in children, including provision of appropriate drugs and counseling to caregivers about signs of severe illness, were presented. The discussion emphasized the importance of increasing responsibility of PMVs for their clients and communities. This was to be achieved by placing CAPACs in a leading role in identifying and organizing training for PMVs. Representatives from all 15 CAPACs indicated a willingness to support this activity within their own communities and to seek the required community inputs.

#### Role of CAPAC

The community was asked, through the CAPAC, to conduct a census of all PMSs in the community and to host the one-day training events for groups of 20–30 PMVs. CAPAC members were also asked to follow up the training with quarterly visits to the PMSs to reinforce the pledge to use only quality drugs and provide appropriate treatment for malaria to all children under five with fever.

#### *Nigeria Government Officials*

##### Advocacy

The Abia State Director of Primary Health Care (DPHC) provided coordination and advocacy support for the PMV intervention, resulting in program endorsement by both the Abia MOH Permanent Secretary and Commissioner of Health. To expedite collaboration, the DPHC designated the Chief of Pharmaceutical Services (CPS) as the SMOH key contact for the activity. The excellent collaboration of the DPHC and the CPS with the program and the participation of their representatives in the training sessions were indicative of the high level of SMOH commitment and support for the PMV intervention.

##### Role of Officials

SMOH support gave a clear indication to SMOH operational staff that their participation and cooperation with the PMV training program was expected and had official approval. In particular, health department heads in both Aba South and Aba North LGAs were asked to urge the Officers in Charge of PHCs to support the PMV interventions and to accept referrals by PMVs to their respective clinics.

The SMOH also facilitated interactions with the Abia branch of the NAPPMED. The NAPPMED officers were assured that the PMV intervention had official support and the CPS went personally to several PMV meetings to endorse the program and reassure the PMVs that the authorities were not going to use the activity to levee taxes or enforce any regulations that could interfere with PMVs' business. This helped allay concerns that some PMVs had about the intervention.

The DPHC also reassured health professionals (doctors and nurses) and their associations that support for the program was not a blanket endorsement of all actions of untrained drug sellers. Although the active participation of health professionals was not required, their willingness not to oppose the training was necessary.

### *National Association of Patent and Proprietary Medicine Dealers*

#### Advocacy

Representatives of the SMOH and BASICS II staff met with the State Officers and Zonal Chiefs of NAPPMED and obtained their support for the PMV intervention.

#### Role of Association

NAPPMED urged members of their organization to attend the PMV training sessions and helped to convince PMVs that the intervention would not be used to tax or restrict their activities.

### **PMV Census**

The partners developed and field-tested a census form and questionnaire. Each of the 15 CAPACs identified two community members to conduct field surveys to locate all PMSs in the catchment area and register the owners or attendants present at the time. All enumerators attended a one-time training program to prepare for the activity. A cartographer instructed the group on making simple maps to geographically locate the shops within the community.

The enumerators undertook a four- to five-day census of all PMSs in its area. A total of 1,031 PMSs were registered in the 15 catchment areas in Aba South and Aba North.

To be included in the count, facilities had to be:

- Manned by one or more PMVs (street hawkers were not included);
- Unregistered with the Pharmaceutical Society of Nigeria; and
- Owned and staffed by individuals who were not qualified as pharmacists.

Enumerators networked through PMVs identified by CAPACs to find other less well-known PMVs. In some cases, PMVs came forward and identified themselves to be included in the census. Spot checks were conducted to ensure that no PMVs were missed or interviewed more than once.

Questions were asked about any perceived reluctance on the part of PMVs to be interviewed or to take part in the program. Responses indicated that initially some of the PMVs were hesitant to provide information, fearing that some of the enumerators were government employees who might interfere with their business. However, endorsement of the census by the local PMV associations overcame most of their reluctance to participate.

Census information was entered into a database and cross-checked to reduce the chances of double entry.

### **Identification of Master and PMV Trainers**

Master trainers were selected from among BASICS II and HCP training and technical staff. They were charged with conducting the training of PMV trainers (also called peer-trainers).

Each CAPAC selected four PMVs as candidates in their respective catchment areas. Criteria used for selection of potential PMV trainers were:

- Literacy (able to read and write, as well as communicate effectively);
- Possession of a Secondary School Certificate;
- Some teaching experience;
- Stated availability and willingness to act as a trainer; and
- Residence in the catchment area for at least two years.

Master trainers interviewed all candidates, and about 20 PMVs were selected to be PMV trainers.

### **Training of Trainers**

The chief architect of the training manual organized and supervised the training of a core group of master trainers over the course of two days. Following a trial run by the master trainers, final modifications were incorporated into the training design and manual.

Twenty selected PMVs participated in one of two simultaneous, two-day training sessions along with some CAPAC representatives who were invited to attend the Training of Trainers (TOT) to better understand the program content. For logistical and performance reasons, the training teams were composed of three to four PMV trainers working together. The best PMV trainers were selected to direct the training and others served as resource persons and substitute trainers.

A meeting to finalize logistics for the community-level training was held about one week after the TOT. At that meeting, PMV trainers prepared flip charts for their presentations and met with CAPAC representatives to plan the community-level training for all other PMVs. Accordingly, the respective CAPACs made arrangements to host the one-day training sessions and officially invited the PMVs in their area to attend.

### **Community-based PMV Training**

Cascade training by PMV trainers at the community level was one of the pillars of the program and the mechanism by which malaria management at the household level was facilitated and expanded.

During a two-week period in mid-August to early September 2003, a total of 564 PMVs were trained in 46 community-based training events. Many of those invited to the early training sessions did not show up. This was probably due to the lingering perception by the PMVs that the intent of the course was to regulate and restrict their activities. Reassurances by the MOH to the contrary and availability of PPAMs resulted in improved attendance. Requests for another opportunity were received from

many of those who had missed earlier sessions. A “mop-up” was carried out on November 4–7, 2003, and an additional 268 PMVs were trained in four communities, bringing the total number trained to 832.

PMVs paid for their own transportation to the training session, if necessary, and received a modest meal near the end of the day. The only tangible incentives were the materials that they received at the end of the training (see below). Even so, there was strong demand for the training among PMVs, and PMV association leaders urged the partners to provide the training to PMVs throughout the state. Radio promotion of PPAMs and the PMV intervention contributed to awareness and demand. PMVs consistently indicated that their desire to learn about malaria and other diseases was the key motivating factor for attending the training, and the partners were urged by many participants to present other topics in future training events.

The increase seen in attendance at training sessions over time was attributed to several factors:

- Endorsement of the intervention by the local PMV associations;
- High-profile support of the intervention by the Abia SMOH;
- Increasing awareness of the value of the program and educational materials;
- Parallel growth in the supply of PPAMs made available for purchase through SFH and its distributors; and
- Mass media promotion of PMVs and PPAMs.

The training sessions were characterized by a high degree of trainee participation and trainee/trainer interaction. The afternoon sessions included at least an hour of role-playing targeted at improving PMV/caretaker interactions and ensuring that PMVs ask key questions about the patient, his or her symptoms, and the course of illness. Malaria prevention and the use of ITNs were presented, and sample ITNs were available for demonstration.

### **Communication Support for Material and Mass Media Promotion**

The partners, principally HCP, produced communication support materials for use by PMVs. Materials included shop identifiers and BCC materials such as job aids. Upon completion of the training, each PMV trainee received a set of the following items:

- *Fever: Home Based Care and Treatment of Children Under 6 Years* (8-page caregiver manual) (100 copies);
- Guide for home-based malaria treatment (1-page fever card) (100 copies);
- *Fever: Home Based Care and Treatment of Children Under 6 Years: An Information Booklet for Patent Medicine Dealers* (12-page booklet) (2 copies);
- Logo (dangler) for identifying the shop of one who has completed the course (1);
- Shop sticker with the above logo to place outside the shop (1); and a
- Certificate containing a pledge for performance (1).

The first two items were handouts for the PMVs’ clients. These reinforced the training in several ways. They complimented and reiterated the information that the PMVs were instructed to give to caregivers, and in cases where PMVs were not performing well, they could serve as a primary source of information on malaria for the caregiver. These materials and job aids were intended to serve as a prompt for PMVs to inform and educate caregivers on home management of malaria and provide

tools to enhance the counseling. Lastly, the handouts served as an incentive for clients to revisit those shops.

The other items were to be kept in the PMS as job aids and identifiers to show that the PMV had been trained and had pledged to improve service to the community.

Both SFH and HCP field-tested and launched radio, billboard, and marketplace promotion of PPAMs (SFH). HCP used radio to encourage early treatment of malaria and promote PMVs who displayed shop indicators given out at training. These activities were effective in creating demand for PPAMs.

The first set of radio messages in August 2003 promoted the newly launched PPAMs and highlighted the brand name and RBM Nigeria logo. These messages were followed after several months by a radio series that encouraged caregivers to treat children with fever quickly and to get medicine from PMVs trained by the program. Each series was originally broadcast three to four times per day every day for six weeks. Some of these broadcasts were repeated for varying lengths of time over a several-month period into early 2004.

### **PMV Support**

CAPACs accepted responsibility for periodically visiting PMVs to encourage their adherence to their pledge to sell appropriate and complete treatment for malaria and to not sell fake or expired drugs. CAPACs also served as the link to PMVs for new supplies of the two items given out to caregivers—*Fever: Home Based Care and Treatment for Children Under 6 Years* (caregiver manual) and the guide for home-based malaria treatment (fever card). This component of the intervention and its impact have not yet been adequately measured or evaluated.

## ASSESSMENT OF INTERVENTION

The PMV intervention was evaluated to inform program decision-makers about changes in the knowledge and skills of PMVs regarding treatment of childhood malaria. An adequacy design with pre- and post-intervention measures was used to measure knowledge and practices in a randomly selected sample of the PMV population (Habicht & Victora, 1999). The evaluation was not designed to rule out potential confounding factors through the use of a control group.

During implementation of the PMV intervention, the partners continued their activities related to community-based child health interventions in the project sites. Those activities aimed at improving caregiver knowledge and practices were unlikely to affect PMVs. The mass media campaign and other activities associated with the launch of PPAMs, undoubtedly, did have an effect on PMVs.

Data collection was carried out immediately prior to the PMV intervention, in July 2003, and also in January 2004, over four months after the majority of PMVs had been trained. The pre-and post-intervention surveys included two types of data collection. The first was a simulated visit approach using mystery clients (Madden, Quick, Ross-Degnan, & Kafle, 1997) to measure changes in PMV practices. The second method was an inventory of the drugs available in the PMSs using an adaptation of the logistic system assessment technique (Logistics Indicator Assessment Tool or LIAT) developed by the DELIVER Project (Techlemariam, Williams, & Copeland, 2002). This also included a profile of shop attendants, a structured interview to measure knowledge about management of malaria in children, and observations of the presence of intervention Information-Education-Communication (IEC) materials.

The PMV sample was drawn from a census of PMSs conducted in May 2003. The sample was designed to measure changes of 15 percentage points in key indicators with 95% certainty that change did not occur by chance. A single sample was drawn for both the simulated visits and the inventory, but simulated visits were carried out independently of the inventory. Therefore, PMVs who participated in the inventory were unaware that a mystery client would also visit them.

Information on the number of PMVs sampled and on completed simulated visits and inventories appears in Table 1. The pre-intervention survey sampled 245 PMVs. The post-intervention survey sampled 227 PMVs.

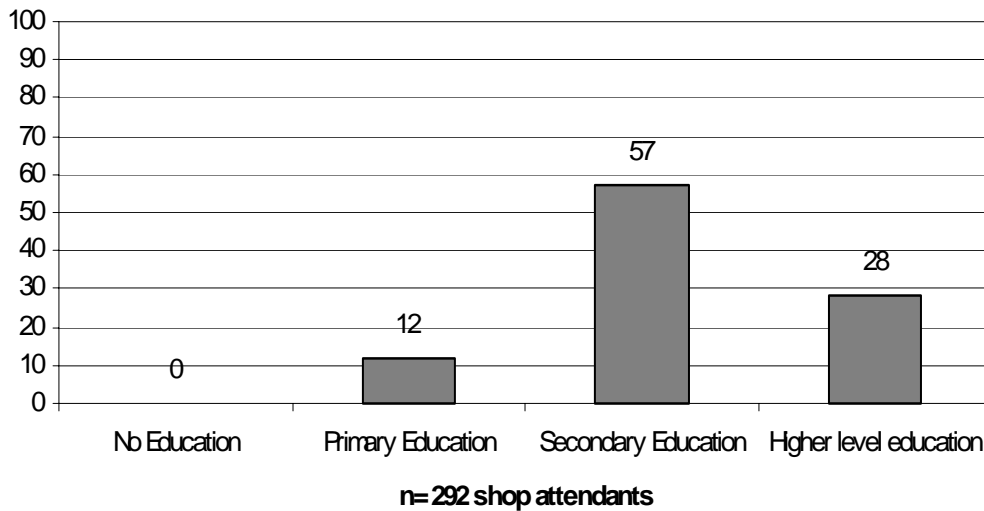
**Table 1. Sample Size and Response Rates for Pre- and Post-intervention Surveys**

<b>Activity</b>	<b>2003</b>	<b>2004</b>
# PMV outlets sampled	245	227
# simulated visits completed	224	215
# PMV inventories/interviews completed	194	215
Simulated visits response rate	91%	95%
PMV outlet inventory response rate	76%	95%

### *Shop Inventory and Changes in PMV Knowledge*

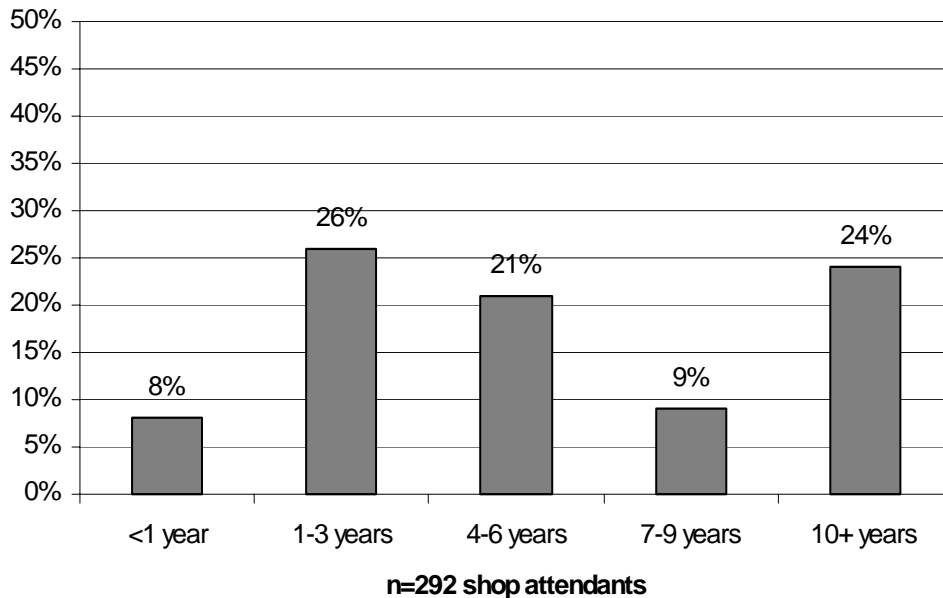
Findings from the July 2003 pre-intervention survey show that, on average, PMV shops had 1.7 attendants per shop, ranging between 1 and 6. Figure 2 shows that 57% of PMVs had attended or completed secondary school, and 28% had attended or completed a higher level of education.

**Figure 2. Highest Educational Level Attended by PMV Shop Attendants, Aba South and Aba North LGAs, 2003**



Stability in employment at the same shop is relatively high among PMVs, with 80% at the same shop for more than one year, 54% for more than four years, and 24% for more than 10 years (Figure 3). Unfortunately, the inventory did not differentiate between attendants who were shop owners and employees. The long duration of employment may be indicative of the shop owner or family members serving as attendants.

**Figure 3. Duration of Employment in PMV Shops, Aba South and Aba North, 2003**



There was a strong uptake of PPAMs and, by the post-intervention survey in January 2004, the previously unavailable pre-packs of CQ and SP were present in 91% and 88% of shops, respectively. The survey also showed that 96% of the PMV shops were displaying at least one of the three

materials distributed at the training in full view. The shop dangler (Figure 4) was the most commonly seen (79%), followed by shop stickers (69%) and the dosage chart for PPAMs (65%).

**Figure 4. Shop Dangler**



It appears that the training contributed to significant improvement in PMV knowledge in several important areas. PMV knowledge about the need to use ITNs tripled (21% to 65%) between pre- and post-intervention surveys. Simultaneously, PMVs were far less likely to report any mosquito net (included one that is untreated) as an effective means of preventing malaria (Table 2).

**Table 2. PMV Knowledge of Methods of Preventing Malaria in Children Under Five, Pre- and Post-intervention**

Methods	2003 n=186	2004 n=215	<i>p</i>
Any mosquito net	52%	30%	<.01
Treated net	21%	65%	<.01

Any mosquito net: Z-score = 4.5

Treated net: Z-score = -8.8

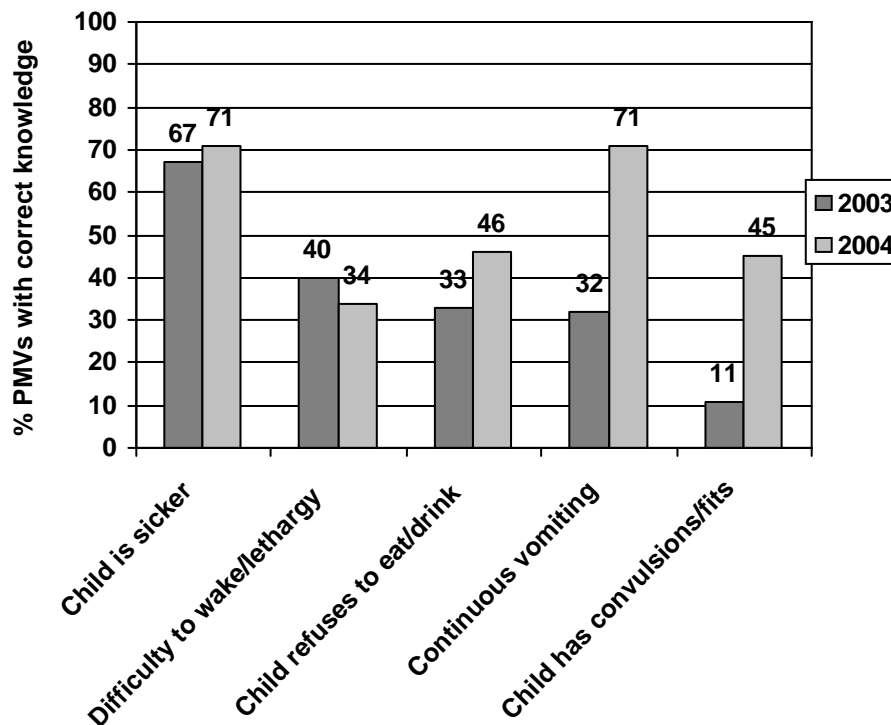
When asked to name signs of severe illness in children under five, PMVs showed a significant improvement for three of five key signs. Most importantly, the post-intervention survey found that PMVs were four times as likely to mention convulsions, the most common sign of cerebral malaria and one that is frequently not regarded by caregivers and PMVs as a sign of malaria (Table 3, Figure 5).

**Table 3. PMV Knowledge of Signs of Severe Illness in Children Under Five that Require Seeking Treatment from a Health Facility**

Signs	2003 (n=186)	2004 (n=215)	<i>p</i>
Child is sicker or still has fever 2 days after treatment	67%	71%	.41
Lethargic/unconscious	40%	34%	.29
Child refuses to eat/drink	33%	46%	.01
Continuous vomiting	32%	71%	<.01
Convulsions	11%	45%	<.01

Convulsions, child refuses to eat/drink, continuous vomiting, lethargy, child is sicker, Z-scores = -7.5, -2.7, -7.8, 1.25, and -0.86, respectively.

**Figure 5. PMV Knowledge of Signs Requiring Facility Care in Children Under Five with Malaria, Aba North and Aba South LGAs, 2003 and 2004**



*Simulated (Mystery Client) Visits*

PMVs selected for simulated visits were visited only once during the pre- and/or post-intervention survey. Mystery clients, visiting shops without a child, either sought treatment for a two-year-old child suffering from a simple fever that began the previous night, or sought treatment for a two-year old child who had fever and convulsions the previous night. Mystery clients in both scenarios initially presented the signs of illness and provided information on age, duration of illness, etc., only if they were asked. Mystery clients discretely filled out a standardize form immediately after the visit to record their interactions with the PMVs.

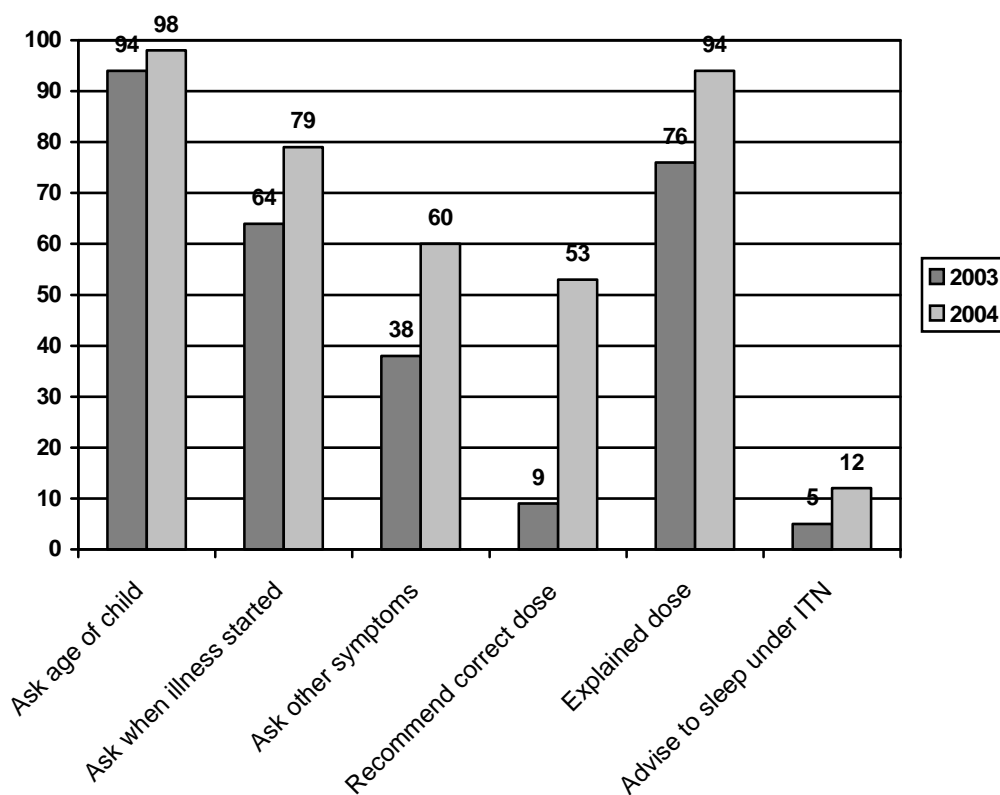
Results for key practices among PMVs are shown in Tables 4 and 5 and Figures 6, 7, and 8. Results from simple and complicated malaria scenarios were combined for questions where the recommended practice did not differ by type of malaria presented (Table 4; Figure 6). Significant increases were observed for all practices in this category, except for “asked the age of the child,” which was acceptably high to begin with, and “advised that the child sleeps under an ITN.”

**Table 4. PMV Practices: Pre- and Post-intervention Results Combined for Simple and Complicated Malaria**

Practice	July 2003 n=224	Jan 2004 n=215	<i>p</i>
Asked age of child	94%	98%	.04
Asked when illness started	64%	79%	<.01
Asked for other symptoms	38%	60%	<.01
Recommended/gave correct dose	9%	53%	<.01
Explained dose for complete treatment	76%	94%	<.01
Advised that child sleep under an insecticide-treated bednet	5%	12%	.01
Asked age of child	94%	98%	.04
Asked when illness started	64%	79%	<.01
Asked for other symptoms	38%	60%	<.01
Recommended/gave correct dose	9%	53%	<.01
Explained dose for complete treatment	76%	94%	<.01
Advised that child sleep under an insecticide-treated bednet	5%	12%	.01

Age of child, when illness started, other symptoms, correct dose, explained dose, child sleeps under an insecticide-treated bednet, Z-scores = -2.06, -3.47, -4.6, -10.0, -5.2, -2.67, respectively.

**Figure 6. PMV practices pre- and post-intervention for simple and complicated malaria simulated visits combined, Aba South and Aba North LGAs, 2003 and 2004**



A nearly six-fold increase in PMVs “recommending or giving the correct dose” (from 9% to 53%) is related to the rapid uptake and sales of PPAMs. PMVs recommended or gave PPAMs to 60% of the simple malaria cases and 49% of the complicated malaria cases (Table 5; Figures 7 and 8). These results clearly demonstrate that the combined efforts of community engagement and education, PMV training, mass media to support training, and the launch of PPAMs had a major impact on the delivery of appropriate anti-malaria treatment to caregivers of children under five with fever or signs of complicated malaria.

**Table 5. PMV Practices Pre- and Post-intervention for Simulated Visits of Either Simple or Complicated Malaria in Children Under Five**

Practice	Simple Malaria <sup>†</sup>			Complicated Malaria <sup>‡</sup>		
	July 2003 N=112	Jan 2004 n=100	<i>p</i>	July 2003 n=110	Jan 2004 n=111	<i>p</i>
Recommended/gave age-specific, pre-packaged chloroquine (CQ) or sulfadoxine-pyrimethamine (SP)	0	60%	<.01	0	49%	<.01
Recommended/gave CQ or SP loose or syrup	49%	27%	<.01	34%	18%	.01
Got correct medicine	48%	87%	<.01	34%	67%	<.01
Recommended/gave antimalarial other than CQ or SP	12%	(5%)	*	(5%)	(2%)	*
Explained signs that require taking child to the health facility <sup>§</sup>	15%	10%	.25	NA	NA	
Referred severe illness <sup>  </sup>	NA	NA		26%	14%	.03

NA = Not applicable

\* Indicates fewer than 10 cases—too few to produce stable estimates.

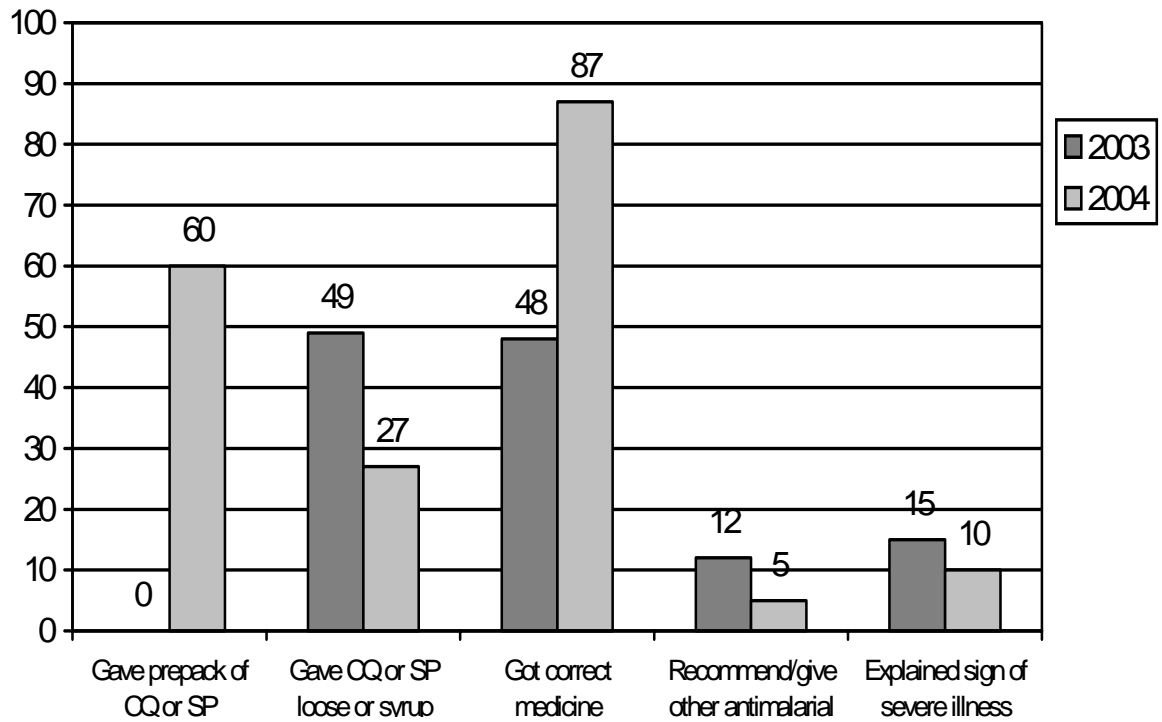
<sup>†</sup> Simple malaria (age-specific pre-pack, CQ/SP loose/syrup, correct medicine, Z-scores = -9.7, 3.3, -6.0, respectively.

<sup>‡</sup> Complicated malaria (age-specific pre-pack, CQ/SP loose/syrup, correct medicine, Z-scores = -8.5, 2.7, -4.9, respectively.

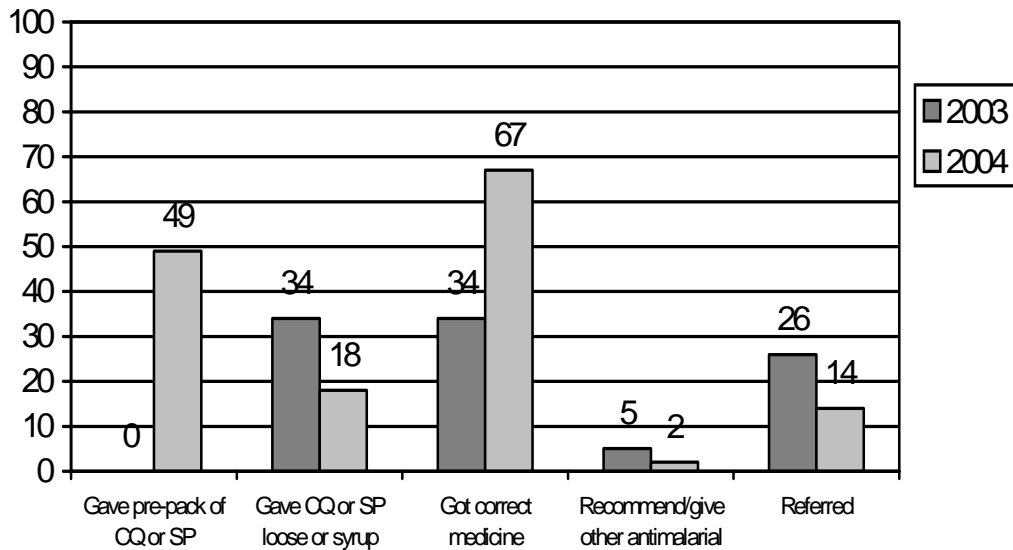
<sup>§</sup> Explained signs, Z-score = 1.09.

<sup>||</sup> Referred severe illness, Z-score = 2.25.

**Figure 7. PMV Actions According to Type of Simulated Visit Case, Simple Malaria, Aba South and Aba North LGAs, 2003 and 2004**



**Figure 8. PMV Actions According to Type of Simulated Visit Case, Complicated Malaria, Aba South and Aba North LGAs, 2003 and 2004**



### *Supporting Data: Consumer Satisfaction Survey*

These data are supported by a consumer satisfaction survey commissioned by SFH in Aba South and Aba North LGAs. That survey, conducted in February–March 2004, identified caregivers who purchased one of the age-specific PPAMs and used the drug to treat a child in the two weeks prior to the survey. Interviewers went door-to-door in order to identify these consumer caregivers. A total of 570 caregivers were identified and interviewed from all 15 catchment areas in the two local governments. Objectives of the survey were to assess caregivers' opinions of the quality of the PPAMs and packaging, as well as to determine whether children were given the full course of the correct age-specific drug.

Sixty-eight percent of the caregivers obtained the PPAM from a PMV, and 85% reported that the child was fully recovered by the fourth day after starting the medicine. Of the 570 interviewed caregivers, 73% received CQ and 27% received SP. Of the children who received CQ or SP, 84% and 83% received the correct dose, respectively. It was also reported that 96% had completed the treatment within three days (Salami & Brieger, 2004).

### *Supporting Data: Integrated Child Health Cluster Survey*

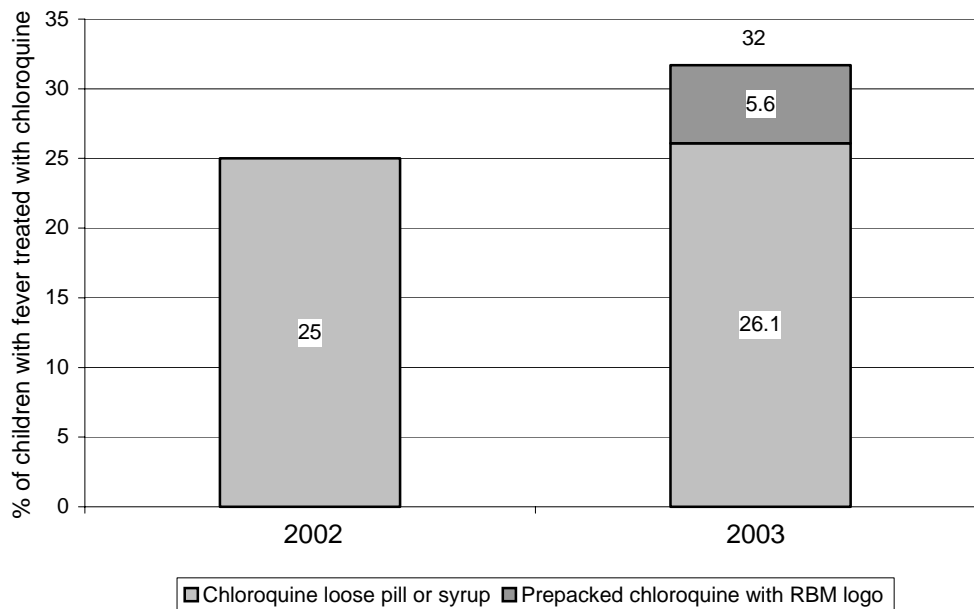
BASICS II monitors performance through a household survey known as the Integrated Child Health Cluster Survey (ICHCS). The ICHCS was conducted in all BASICS II-supported project areas in November 2002 and November 2003. An analysis of the ICHCS results for the two LGAs of Aba South and Aba North provides useful information on the potential effect of the PMD intervention. A majority of the PMV training program was completed by mid-September, with the remainder being finished at about the time of the November 2003 ICHCS. Distribution of PPAMs and mass media promotion began in August 2003, approximately four months prior to the survey. In November 2003, 38% of children less than two years of age had fever in the two weeks prior to the survey, according to their caregivers. A very high proportion of these children was taken for advice or treatment (87%). Forty percent of these children were taken to a PMV or chemist for advice or treatment for their fever. Trends in children receiving CQ appear in Figure 9 below. In 2003, 32% of all febrile children were treated with CQ as compared to 25% in 2002, and a relatively low percentage of caregivers used PPAMs in 2003 (6% used CQ in pre-packaged form; none used SP in pre-packaged form). However, the fact that 6% of febrile children were being treated with the CQ PPAM in November, soon after their introduction, is the first evidence of the availability and use of PPAMs on a general population basis. We expect this trend has rapidly accelerated following the completion of PMV training and continued promotion of PPAMs. Using available data on care-seeking patterns from the household survey and PMV practices from the simulated visits, it is projected that 21% of all children with simple malaria could be treated with the PPAM given current PMV practices.<sup>1</sup>

Far fewer numbers of children with fever received SP in any form than CQ. In 2003, 8% of caregivers said that they gave their child SP for their fever, compared to 2% in 2002.

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<sup>1</sup> Using available data, we see that 87% of children with fever are taken for advice/treatment. Forty percent of these children are taken to a PMV/chemist for treatment. Therefore, we can expect that a PMV or chemist will see 35% of all children with fever. As of January 2004, 60% of PMVs were recommending or selling PPAMs to simulated visitors whose children had simple fever. This indicates that 21% of all children with fever can be expected to receive PPAMs.

**Figure 9. Trends in Treatment of Febrile Children with Chloroquine, Aba South and Aba North, 2002 and 2003**



### Gaps Between Knowledge and Practice

The simulated visits revealed a substantial gap between PMVs’ knowledge of ITNs for malaria prevention and their actual practice in recommending ITN use to the mystery client. While knowledge of ITNs rose from 21% to 65% (Table 2) among PMVs, they only recommended ITNs to 12% of mystery clients—up from 5% at the pre-intervention survey (Table 4). This lack of improvement in practice is not too surprising. None of the PMVs sell ITNs and thus have no vested interest in promoting them. Another equally likely explanation, or perhaps a more likely one, is that ITNs were not available. This explanation was supported by frequent comments by PMVs during training that ITNs were not available in their community or they did not know where to find them.

Another area that requires further examination is the gap between improved knowledge about signs of severe illness and practices of informing caregivers about severe illness or, in the complicated malaria scenario, failure to refer the child to a health facility. PMVs showed significant improvement in their knowledge of certain signs of severe illness (convulsions, refusal to eat or drink, and continuous vomiting), but informing caregivers of danger signs of severe illness fell from 15% to 10% (Table 5; Figure 7). Results for referral of a child with fever and convulsions were similar, decreasing from 26% to 14% ( $p < .05$ ) (Table 5, Figure 8).

One explanation is that there is no motivation to inform caregivers of the signs of severe illness or to refer cases to health facilities, since these actions will more likely decrease than increase PMVs’ sales. For this reason, these are among the more difficult behaviors to change. Clearly, this part of the PMV intervention needs to be improved. Although the lack of improvement can be attributed to a lack of motivation to change these practices, we have no good explanation for the significant decrease in referral. This point will be addressed in the next round of data collection.

## INPUTS AND COST OF INTERVENTION

A comprehensive cost analysis was not undertaken, but direct costs and labor input for conducting advocacy and implementation activities were documented. This allowed us to provide reasonable estimates of the inputs needed for expanding this intervention to areas similar to Aba South and Aba North. Costs related to program development, partner meetings, and BCC and training material development and field-testing represent one-time costs and were not included in the analysis.

Travel costs for partner staff were also not included. Staff travel in the field was mostly to and from the participating communities and was not included because of the complexity of obtaining accurate estimates and because distances between a central location and implementation sites may be very different in other sites.

Table 6 shows the partner staff level of effort. The period from the first actions, Advocacy, to the last, Community-based Training, covered a period of about three months. If the staff efforts were evenly distributed, the level of effort needed to execute the intervention would amount to about one-third time for one senior staff person (plus about 1.25 days per month for a senior SMOH official), and full-time for two technical support staff people over three months.

**Table 6. Partner Staff Level of Effort (Based on BASICS and HCP input), Nigeria Intervention**

<b>Activity</b>	<b>Senior Staff (Equivalent Days)</b>	<b>Technical Support Staff (Equivalent Days)</b>
1. Advocacy/partner coordination	12.25 (4 Ministry of Health)	7.5
2. PMV census	2	33
3. Identification of master and PMV trainers	4.25	9
4. Training of master trainers	3.5	14
5. Training of PMV trainers	4	16
6. Community-based PMV training	0	42
<b>Total</b>	26	121.5

If the program was extended to other LGAs in the same state where CAPACs are present, most of Activity 1 and all of Activities 3 and 4 would not need to be repeated. It would also be possible to use PMV trainers in neighboring LGAs, in which case, Activity 5 would not be needed. As the program gains confidence, the need for staff to monitor training events (Activity 6) could also be reduced. In sum, although it is difficult to predict accurately, an expansion into other CAPAC areas could be done with a large reduction in senior-level personnel and a moderate to large reduction in the need for support-level personnel. The level of effort for program maintenance costs has not been indicated because this is the responsibility of the CAPAC.

Approximate direct costs are presented in Table 7, and a detailed breakdown of costs and level of effort is presented in Annex A.

**Table 7. Direct Costs, Nigeria Intervention**

Activity	Direct Cost	
	Naira	U.S. Dollars
1. Advocacy/partner coordination	38,330	295
2. PMV census	253,520	1,950
3. Identification of master and PMV trainers	0	0
4. Training of master trainers	0	0
5. Training of PMV trainers	78,935	607
6. Community-based PMV training	475,750	3,660
<b>Total</b>	<b>846,535</b>	<b>6,512</b>

At the time of these activities, the exchange rate was approximately \$1 = 130 Naira, giving total dollar costs of \$6,521. With 832 PMVs trained, the cost per PMV was \$7.80.

Each PMV received the following materials, with cost indicated, to display and use in their shops or to hand out to caregivers:

• Fever card	\$0.07 x 100	7.00
• Caregiver manual	\$0.06 x 100	6.00
• Dangler	\$0.49 x 1	0.49
• Information booklet for PMVs	\$0.25 x 2	0.50
• Shop sticker	\$0.13 x 1	0.13
• Poster	\$0.17 x 1	0.17
• Bag	\$0.18 x1	0.18
• Ballpoint pen	\$0.11 x 1	0.11
• Copy book	\$0.16 x 1	0.16
• Certificate (laminated)	\$0.05 x 1	0.05
		<u>\$ 14.84</u>

PMVs are currently underutilized as a resource to reach caregivers. PMVs were supplied with 100 copies of the fever card and caregiver manual for distribution. These materials not only served as a means of reaching caregivers with targeted messages but also served as cues and provided the context for the PMV to counsel caregivers. The cost of 100 fever cards and 100 caregiver's manuals was \$13.00 per PMV. The cost of all other materials was just \$1.84.

These costs could be easily reduced with some minor modifications, such as reducing the caregiver manual from eight pages to one or using lower quality paper, and by large bulk purchase needed for going to scale.

## CONCLUSIONS

Results presented here compare favorably with those from similar interventions, but it is important to keep in mind that results were obtained at only two to four months post-intervention. Further evaluation will be needed to determine how sustainable these changes are over time. Regarding the key practice of supplying the correct dose of the preferred antimalarial drug, both the Nigeria and Kilifi Kenya interventions reported significant increases in the frequency with which PMVs gave an adequate or correct dose. The Nigeria intervention recorded improvements of 9% pre-intervention to 53% post-intervention, and the Kenya intervention reported an increase from 4% to 65%, respectively (Marsh et al., 1999). Two practices that did not improve, and where the program needs improvement, are: recommending ITNs for prevention of malaria and referral of children with signs of severe illness.

Implementation of the PMV intervention was relatively fast. It took about six weeks from the TOT to completion of the first round of training sessions, which reached 564 PMVs. Another 268 PMVs were trained about two months later in a three-day mop-up exercise. The vendor-to-vendor initiative, the only other intervention of comparable scale, reached 450–500 shopkeepers in about six months (Tavrow, 2003).

Although a detailed cost analysis was not undertaken, the direct costs and level of effort for the Nigeria intervention were determined and these compare favorably with other interventions. The total direct field cost for the Nigeria intervention was about \$6,500. The direct cost of the vendor-to-vendor intervention, excluding formative research, was about \$6,300 (Tavrow, 2003), a figure that included printing of sufficient materials for 1,500 shopkeepers. It is difficult to compare the level of effort for the PMV intervention with other interventions. It is clear that the PMV intervention relied more on project staff and community input than either the Kilifi intervention, which relied more on MOH personnel (Marsh et al., 1999), or the vendor-to-vendor intervention that relied on private sector workers (Tavrow, 2003).

We recognized some key weaknesses of this intervention. Closing the gap between changing knowledge and changing practice among PMVs is a challenge that needs to be addressed. Another area that needs strengthening is that of monitoring and supervision of the PMV. At present, there is no formal supervisory system. CAPACs are to persuade PMVs to adhere to their pledge, and although some have an understanding of the main issues in malaria management, they are not in a position to monitor and supervise PMVs. Using the PMV association (NAPPMED) is an option that is under consideration in LGAs in Abia that have no CAPACs. The partners will continue to search for other means of providing supervision and motivation to PMVs.

### **Key Obstacles to Implementation of the PMV Training**

National government authorities were initially wary of the PMV intervention but allowed the partners to proceed with the PMV intervention in Abia State. Initially, there was also mistrust and/or lack of interest in the program among some PMVs. In general, the program was accepted by most PMVs, mostly due to their fear that it would be used to interfere with their business.

## **Enabling Factors Supporting the Intervention**

### **Enabling factors that supported the PMV intervention in Nigeria included:**

- The strong collaboration, blessings, and support provided by Abia State and Aba South and Aba North LGA authorities;
- Timing that allowed the near-simultaneous launching of PPAMs and PMV training; and
- Strong collaboration among the various partners, leading to synergy and high-quality implementation.
- CAPACs were strong community-based partners that ensured broad acceptance and understanding of the intervention and garnered community cooperation and collaboration with a minimum of effort.
- PMV-peer trainers were a strength of the intervention, but initially there had been two principal concerns about this approach. One concern was how willing they would be to train other PMVs and the other was the quality of the training they would deliver. In fact, the PMVs were eager to lead the training sessions. This was in part due to a modest stipend they were given for each training, but they were also pleased with the recognition this brought them among their peers. The PMVs also performed well as trainers. Because this approach is relatively inexpensive and the number of trainers can be rapidly increased, it can be expanded relatively easily and taken to scale.
- Launching a comprehensive BCC strategy that included mass media promotion of PPAMs, shops displaying indicators from the PMV training, and early treatment of fever with antimalarials, preferably PPAMs, contributed to the intervention's success.
- The focused, one-day training also contributed to relatively easy, rapid implementation that can be taken to scale. It is also amenable to PMVs, who typically work alone and may be forced to close their shops to attend training sessions.

### **Experience in LGAs without CAPACs**

Following completion of the intervention in Aba South and Aba North, the partners were asked to expand the intervention to LGAs in Abia State where CAPACs had not been formed. The SMOH and other partners worked with NAPPMED to implement the PMV training in nine additional LGAs in Abia State.

Traditional leaders were used in place of CAPACs to sensitize the population, but there was considerably more investment of time by senior and mid-level partner staff in meeting and discussing the program with this diffuse group of traditional leaders. Advocacy was accomplished for all of Aba South and Aba North through a single meeting of the CAPAC Network Forum.

In the absence of CAPACs, the PMVs, through NAPPMED, took on more responsibility. The membership list from the local branch of NAPPMED replaced the census to identify PMVs for the training. It was felt that this was adequate, but not as effective as having CAPACs identify PMVs in their community. On occasion, PMVs who had not received invitations from the local NAPPMED branch came to the training site, having heard about the training from the traditional leaders. This led to confusion over who should and should not be at the training. The local branch of NAPPMED also took over responsibility for locating a venue for the community-based training, which they usually did in collaboration with community leaders.

Because of proximity and similarity in culture, it was possible to use some of the PMV trainers from Aba South and Aba North in the neighboring LGAs. Overall, the rollout of PMV training activities in the nine additional LGAs went smoothly, indicating a potential for going to scale in other areas in Nigeria with or without the presence of strong CBOs.

The Federal Ministry of Health followed the intervention in Abia and, based on the positive outcome, began to take a more active and supportive role for expansion of the intervention into a limited number of LGAs in Lagos and Kano States.

### **Expanding Scope of Intervention**

One potential strength of the training approach used in this intervention is that it can readily be adapted to other needs. This would be particularly true of child health issues that require only a few key messages, involve relatively safe drugs with simple regimens, and where the PMVs would be motivated by increased sales. Among those that might be considered are diarrhea, common soil-transmitted helminths, micronutrients, and perhaps ARI.

## **PART 2. UGANDA**

### **BACKGROUND**

Malaria is the leading cause of death in children under five in Uganda (WHO, 2000b), and the government and partners are actively engaged in strategies to reduce malaria and other major causes of child mortality. A nationwide study conducted in Uganda showed that outside-the-home care was sought by 65% of caregivers for sick children. Of those, 87% sought care for fever, diarrhea, or ARI from formal or informal private providers. The same study found that these providers were also selected as the first source of care for severe cases—71%, 79%, and 80% for difficulty breathing, fast breathing, and convulsions, respectively (Republic of Uganda MOH, 2001a).

A situation analysis conducted by the Integrated Management of Childhood Illness (IMCI) Unit (Republic of Uganda MOH, 2001) revealed that policies and regulations related to the practice of private practitioners are well established. However, there is a gap between the policies and regulations and actual practices on the ground, and it is estimated that 65% of private practitioners are not registered with the relevant authorities.

In September 2002, in recognition of the role of private practitioners, the MOH IMCI Unit and the National Malaria Control Program led efforts to develop a national strategy to define the roles of private providers in child survival. The IMCI and Public Private Partnership Units of the MOH facilitated a strategy development workshop, guided by results from the situation analysis. That workshop, attended by government officials, non-governmental organizations (NGOs), and private associations, led to the development and official endorsement of the “National Strategy for Utilizing the Potential of Private Practitioners in Child Survival” (Republic of Uganda MOH, 2002a). The overall goal of the strategy is to reduce infant and child mortality by improving the effectiveness of child health care offered by private providers, and to close the gap between regulations and actual private practice. The Support for Analysis and Research in Africa (SARA) and BASICS II Projects worked closely with the MOH to adapt, test, and implement an Education, Negotiation and Persuasion approach (ENP, also sometimes referred to here as the negotiation approach) to improve private providers’ practices for major childhood illnesses in Uganda.

### **Intervention Setting**

Luwero is located in the eastern central region of Uganda. Malaria is the leading cause of health problems. Transmission is year-round, with a peak transmission in the rainy season from May through July. Diarrhea and ARI are also main illnesses among children under five, and poor nutritional status is an underlying factor for childhood morbidity and mortality.

Luwero has four counties, 20 sub-counties, and a total population of about 450,000. The main occupation is subsistence farming mixed with cash crops of cotton and coffee. Mechanized and large-scale farming are on the increase. The main ethnic group is Baganda.

The intervention was conducted in the four sub-counties of Kinyogoga, Kamira, Makulobita, and Ngoma, with a total population of approximately 63,000.

## OVERVIEW OF EDUCATION, NEGOTIATION, AND PERSUASION INTERVENTION

The Uganda intervention was based on a strong collaboration between the Uganda MOH, SARA, and BASICS II. SARA established a close working relationship with the MOH IMCI Unit, which it assisted with development of the national strategy, including production of three documents:

1. *Utilizing the Potential of Formal and Informal Private Practitioners in Child Survival in Uganda—Situational Analysis and Outline for Developing a National Strategy* (Republic of Uganda MOH, 2001b);
2. *National Strategy for Utilizing the Potential of Private Practitioners in Child Survival* (Republic of Uganda MOH, 2002a); and
3. *Inventory of Private Health Practitioners in Luwero, Ntungamo and Rakai Districts* (Republic of Uganda MOH, 2002b).

These documents described the situation with private providers and laid out the potential roles they could play in improving management of three major causes of child mortality in Uganda—malaria, diarrhea, and ARI.

The national strategy noted five principal challenges facing inclusion of private providers in child survival programming in Uganda (Republic of Uganda MOH, 2002a):

1. National policy and regulator authorities who do not recognize “informal” private providers and fear that involving unqualified providers could be perceived as formal recognition and encouragement for them to continue their sub-standard practices;
2. Negative attitudes toward private providers based on the perception that they are motivated by profit more than by the welfare of their clients;
3. The difficulty of identifying effective behavior change interventions that will be responsive to the complex factors influencing the private provider-client interaction. These interventions should go beyond seeking to increase the skills and knowledge of providers and also address client pressure;
4. The difficulty of ensuring that the modified target behaviors continue after the intervention; and
5. The importance of achieving large-scale implementation in order to have a significant impact on child survival indicators.

The national strategy also identified Education, Negotiation, and Persuasion (ENP) as the appropriate approach for improving private provider practices. Unlike typical training, this approach is built on obtaining specific information on current practices among the target group and using that as a point for negotiating changes to correct inappropriate practices. This is then formalized with a “contract” stating that the participant accepts the new practices.

The ENP approach comprises two key elements: a Verbal Case Review (VCR) and an intervention strategy for improving the deficiencies noted by the VCR, called INFECTOM (Chakraborty, D’Souza, & Northrup, 2000; Northrup, Chakraborty, & D’Souza, 1998). The VCR is essentially a combination of an exit interview and a verbal autopsy. The VCR screens for cases through a household survey to identify under-five children sick in the previous two weeks and uses an interview form to ask mothers to recall the case management process with the provider seen for that illness.

INFECTOM is an acronym taken from the four components of the intervention:

1. Providing **IN**formation on case management to providers, either in group sessions or individually;
2. Providing **FE**edback to providers regarding their current treatment practices as documented by the VCR;
3. Negotiating a **ConT**ract with the provider, a contract through which providers select practices among those recommended that they can comply with; and
4. **O**ngoing **M**onitoring of provider compliance with the contract using the VCR and regular feedback from monitoring activities to providers and the communities.

These strategies were tested in Bihar, India with 67 providers, 75% of whom had high school degrees. Although none had received formal medical training, they had learned their practice through 5–10 years of informal apprenticeships. All had stethoscopes, a watch or timer, and a basal thermometer available in their clinics. Significant improvements were seen in 8 of 18 practices across three general categories: history-taking, examination, and counseling. For another four practices, more than 90% of participants complied with the correct practice, leaving only six with no significant change or an unacceptably low performance rate (Chakraborty, D'Souza, & Northrup, 2000).

VCR and INFECTOM were also implemented using 22 providers, 13 of whom had medical degrees, in two communities in Pakistan. The study aimed to introduce and improve the core IMCI practices. Significant improvement was seen in 76% (16 of 21) of the targeted practices. The nine unqualified practitioners, who identified themselves as homeopaths, dispensers, dentists, and laboratory technicians, were more cooperative and perceived by project implementers to be more engaged. However, the more qualified individuals showed significantly greater improvement at the end of the intervention. A possible explanation for this apparent difference between perceived level of engagement and outcome was that the qualified individuals integrated the behaviors into their practices more easily because they more easily grasped the underlying rationale of the IMCI algorithm (Luby, Zaidi, Rehman, & Northrup, 2002).

The ENP approach was adapted for use in Uganda and targeted for use with lower-skill-level providers, including drug shops and ordinary shop attendants, many of whom have not completed high school and who typically did not have use of basic medical equipment—a stethoscope, timer, and basal thermometer. Two advantages seen in Uganda with this approach, as opposed to those in some other SSA countries, are that drug shops in Uganda often function like private clinics (Whyte, 1991, 1992), and attendants have often had working experience in government clinics (Nshakira, Kristensen, Ssali, & Whyte, 2002).

One of the major changes in the VCR/INFECTOM model was to replace the VCR with simulated visits to shops to gather information on practices. The results from the simulated visits were used to give feedback to participants. The Uganda intervention was based on negotiating behavior change for malaria, ARI, and diarrhea in children less than five years of age.

The Uganda intervention comprised eight components:

1. *Advocacy and partnerships;*
2. *A situational analysis;*
3. *Inventory of private providers;*
4. *A district-level planning meeting;*
5. *Simulated visits;*
6. *Selection and training of moderators;*
7. *Negotiation sessions; and*
8. *Monitoring and support supervision.*

Advocacy and partnership activities among the MOH, SARA, and BASICS II have been described above. The remaining components are described below and in Annex B.

## **IMPLEMENTATION OF EDUCATION, NEGOTIATION, AND PERSUASION INTERVENTION**

### **Situational Analysis**

A broad-based situational analysis conducted by the MOH IMCI Unit and the SARA Project, provided an overview of the role of private providers in treatment of childhood diseases. The report showed that a significant majority of clients in Uganda go to private, for-profit sources to purchase medication for fever, cough, and intestinal worms. For diarrhea, slightly more seek medication from a public sector source. Among the private sector outlets, a majority of clients seek medication from informal private providers: drug shops and ordinary shops and markets (i.e., PMVs). Excluding traditional healers and TBAs, who do not typically sell commercially available medications, PMVs represent 84% of private outlets (Republic of Uganda MOH, 2001b, 2002b).

### **Inventory of Private Providers**

An inventory of private providers, conducted in the proposed intervention area, provided detailed information on the prevalence and type of private providers and was used to guide decisions on which groups of private providers should be targeted to achieve maximum impact (Republic of Uganda MOH, 2002b).

Three different and representative districts were used as the basis for sampling, and of those, Luwero was selected for the ENP intervention. Of the 1,087 private providers captured in the Luwero inventory, 321 (30%) were drug shops, 74 (7%) were clinics, another 17 (2%) were ordinary shops, and 1 was a pharmacy (Table 8). Traditional healers provide traditional care but also perform invasive procedures, such as tooth extraction. TBAs and maternity homes inform and counsel mothers in relation to childhood illnesses. The inventory showed that these three types of private providers are not significant sources of treatment for childhood illnesses.

Excluding those three groups shows that drug shops and ordinary shops, or PMSs, together represent 77% of all the private sources of medication. This, combined with the fact that owners and

attendants working in these shops typically have little health background or training, made them a logical target for an intervention to improve practices and services.

**Table 8. Type of Private Health Facilities, Luwero District**

Clinics	Maternity Home	Drug Shop	Pharmacy	Ordinary Shop	Traditional Healer	Traditional Birth Attendant	Other	Total
74 (1%)	19 (5%)	321 (30%)	1 (<1%)	17 (2%)	281 (26%)	368 (34%)	6 (<1%)	1,087

### **District-level Planning Meeting**

An underlying precept of the negotiation intervention is to foster ownership by relegation of key decisions to the local level. A district-level planning meeting was held to present results of the inventory to a district committee, which used the inventory results to shape the scope and emphasis of the intervention.

Representatives from district, sub-district, and sub-county health facilities, and representatives from the private providers and NGOs, attended the meeting. Key decisions on the scope and focus of the intervention were made using the inventory results and national strategy (Republic of Uganda MOH, 2002a). A key issue was whether the program would include informal private providers. Resistance among health professionals to work with informal private providers was often encountered and in the Ntungamo District participants at the district-level planning meeting decided against including non-professionals, such as nursing aides working in drug shops and clinics.

In Luwero, the district committee determined that the intervention should focus on owners and attendants from drug shops and clinics. Ordinary shops were excluded in all Luwero and other districts. Participants at the planning meeting also addressed geographic scope, a timetable, identification of moderators, and local resources and external funding sources to support the intervention.

### **Simulated Visits**

Simulated visits were used to identify key case management practices among PMVs. The results were used to present concrete examples to participants of commonly used practices that are appropriate and should be reinforced and those that are inappropriate and need modification. The simulated visit activity consisted of four components: a TOT; a training of mystery clients; the simulated visit survey; and data analysis.

A training manual for mystery clients and a guide for simulated visits were prepared by BASICS II and SARA staff and consultants. A TOT was held for district-level MOH staff who, in turn, trained six mystery clients, comprising two nurses, one community health worker, and three teachers. Three mystery clients were female and three were male.

Each mystery client visited 10–20 drug shops and/or clinics in each of four sub-counties. Mystery clients, visiting the shops without a child, initially presented the signs of illness and asked for assistance. They provided information on the age of the child, duration of illness, etc., only if they

were asked. They sought treatment for each condition, presenting the PMV with one of six scenarios—simple (uncomplicated) or severe (complicated) cases of malaria, ARI, or diarrhea, as follows:

1. **Simple malaria** presented as two-year-old child suffering from fever and sweating the previous night.
2. **Complicated malaria** presented as a two-year-old child with fever, sweats at night, and sometimes convulsions.
3. **Simple diarrhea** presented as a one-and-a-half-year-old child suffering from diarrhea.
4. **Severe diarrhea** presented as a one-and-a-half-year-old child suffering from diarrhea, passing many watery stools.
5. **Simple ARI** presented as a one-year-old child suffering from a runny nose and not feeling well.
6. **Severe ARI** presented as a one-year-old child with a fever, cough, and difficult breathing.

A standardized reporting form was discretely completed by the mystery clients immediately after each visit to capture the PMVs' practices with regard to their assessment of the different illness conditions, advice and treatment-giving, including whether PMVs inquired about the age of the sick child, duration of illness, feeding during illness, previous medication given, and signs and symptoms of different childhood illnesses. In addition, mystery clients reported on medicines and the dosages provided or recommended, whether explanations were given with medicines, and if referral was recommended. The number of PMVs visited by each mystery client varied according to the number of selected facilities that were open on the day of the visit.

District health staff and a BASICS II consultant monitored and supervised these activities to ensure quality data entry. Data were analyzed and used to develop negotiation guidelines.

Baseline data revealed that almost all PMVs inquired about the age of the child, and a reasonable percentage inquired about the duration of illness, but there were a number of weaknesses in their handling of the simulated cases. Data showing critical areas of weakness were used as main training themes and presented to PMVs as examples of the need for improvement. Among the areas of weakness for a large majority of PMVs were: giving/recommending wrong treatment for simple malaria, simple diarrhea, and simple ARI; failure to refer cases of severe malaria and pneumonia; and failure to advise caregivers to continue liquids and feeding during illness. This report will present only data on the management of fever.

### **Selection and Training of Moderators**

Two to three health workers from each of the four sub-counties were selected to lead the PMV negotiation sessions. These moderators received a two-day training facilitated by district health staff and a BASICS II consultant.

## **Negotiation Sessions**

A health assistant in each sub-county delivered an invitation explaining the objectives of the training to all PMVs identified in the inventory. It was felt that a personal visit and explanation was necessary to overcome suspicion among PMVs that this event might be used to restrict or interfere with their business. A total of 104 PMVs from four sub-counties (30 in Kinyogoga, 24 in Kamira, 24 in Makulobita, and 26 in Ngoma) participated in the three-day negotiation training conducted in each sub-county. Although the distinction was not always easy to make, about three-quarters of the facilities were classified as drug shops and the remaining quarter as clinics. District health staff and BASICS II consultants supervised the negotiation sessions.

Moderators facilitated each negotiation session with PMVs. On completion of the session, each PMV was asked to sign a contract (Annex C), pledging to undertake specific actions to improve his or her management of malaria, ARI, and diarrhea in children. All 104 signed the contract. Each also received BCC materials related to the treatment of malaria and ARI to use and display in their shops.

## **Monitoring and Support Supervision**

Moderators or project supervisors were responsible for monitoring and support supervision visits to each PMV.

One supervisory visit to each PMV was completed about one month after the training. Subsequent visits were projected for every quarter. During the visit, supervisors asked to see the contracts and inquired about difficulties the PMV may have had adhering to the contract. Strategies to overcome any difficulties encountered were discussed and reinforcement was given for positive changes in PMV's practices.

## ASSESSMENT OF INTERVENTION

About two months after completion of the PMV negotiation sessions, the simulated visits were repeated. Data from both the baseline and follow-up surveys were entered into a database program and analyzed using SPSS. Results are presented in Table 9 and Figures 11 and 12.

**Table 9. Management of Simple and Complicated Malaria by PMVs, Kamira, Makulubita, Kinyogoga, and Ngoma Sub-counties, Luwero District**

Private providers who:	Simple Malaria			Complicated Malaria		
	Baseline N=57	Evaluation N=66	<i>P</i>	Baseline N=61	Evaluation N=72	<i>p</i>
Asked about the age of the child	100%	97%	.23	98%	99%	.68
Asked if the child had cough/cold	82%	87%	.42	21%	35%	.07
Advised to sleep under an insecticide-treated bednet	0%	5%	.04	0%	24%	<.01
Gave or recommended medicine	98%	73%	<.01	85%	57%	<.01
Gave or recommended correct medicine	2%	73%	<.01	2%	90%*	<.01
Gave correct dose	0%	68%	<.01	2%	47%	<.01
Explained how to give the drug	8%	66%	<.01	70%	61%	.27
Asked if the child had convulsions	21%	23%	.76	NA	NA	
Advised on signs for immediate care	0%	34%	<.01	NA	NA	
Advised on referral	NA	NA		16%	33%	.03
Asked about the duration of illness	NA	NA		13%	99%	<.01
Asked about previous medication	NA	NA		54%	82%	<.01

NA = Practice not applicable or not measured for the condition presented.

Private providers were advised to refer complicated cases immediately; correct medicine here is the same as for simple malaria.

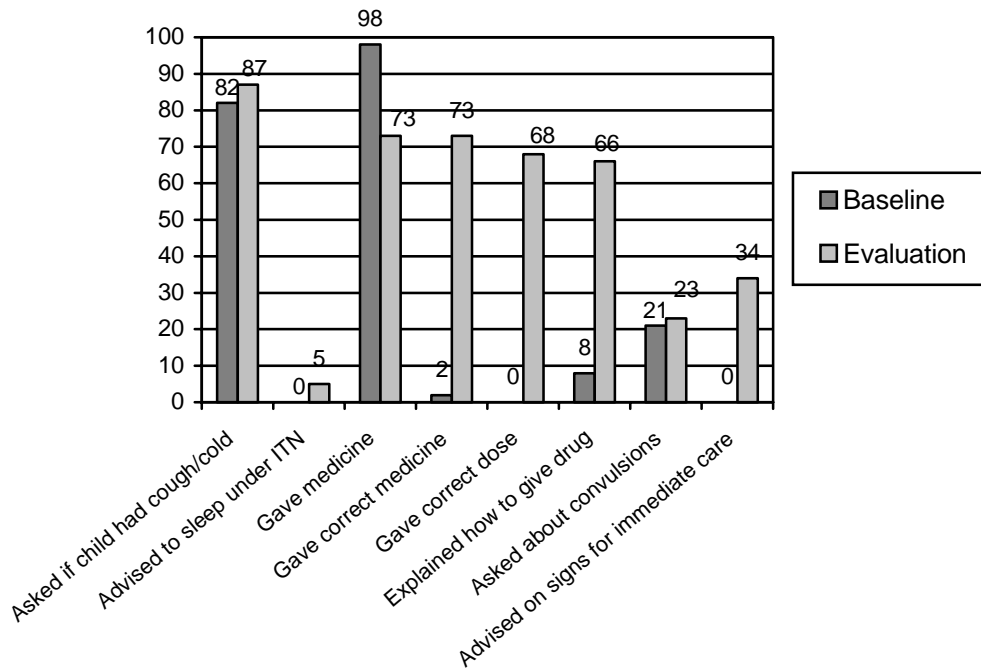
Overall, the results were very encouraging and significant improvements were recorded for a number of important PMV practices for the treatment of simple and complicated malaria in children under five. These included: recommending correct medicine, recommending the correct dose, and giving the correct dose. For “explained how to give medicine,” there was a significant increase for simple malaria, but a slight drop for complicated malaria.

There was a disturbing trend for recommending any medicine for simple malaria, for which there was a significant decrease from 98% to 73%. We have no reasonable explanation for this finding. There was a similar significant reduction for complicated malaria, with a decrease from 85% to 57%, but if this is linked to the negotiated practice of immediate referral of all cases of severe illness, which increased significantly from 16% to 33%.

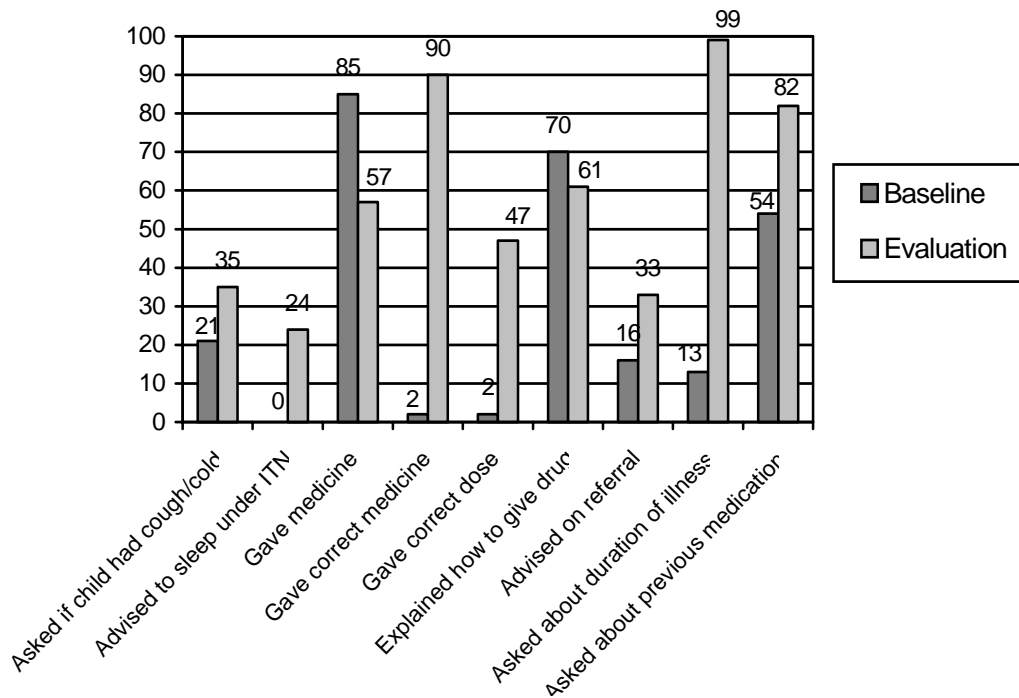
The absence of change in inquiring about convulsions in simple malaria cases was disappointing. However, there were significant increases in advising on the use of ITNs for cases of complicated malaria, and a near-significant increase for cases of simple malaria.

Some other practices were already common and no significant improvement would be expected, such as inquiring about the age of the child and, in the case of simple malaria, inquiring if the child had a cough or cold.

**Figure 10. PMV Practices for Management of Simple Malaria in Three Sub-counties, Luwero District, Uganda**



**Figure 11. PMV Practices for Management of Complicated Malaria in Three Sub-counties, Luwero District, Uganda**



## INPUTS AND COST OF INTERVENTION

Labor input and direct costs for conducting advocacy activities and field implementation were documented (Tables 10 and 11). Although this documentation provides reasonable data on the inputs for this small pilot intervention, we believe that the cost per trainee will be significantly lower in a large-scale intervention. We did not include costs related to concept development and partner meetings, overhead, BCC and training material development, field-testing materials, personnel input from the MOH, or staff travel costs.

Staff and consultant travel in the field, which mostly comprised travel to and from the participating communities, was not included partly because of the complexity of obtaining accurate estimates, but also because distances between a central location and implementation sites may be radically different in other sites.

Table 10 shows partner staff level of effort. The costs of advocacy were impossible to reconstruct, but these will not need to be repeated and so would not be included in an expansion of the program in Uganda. The LOE of SARA and MOH senior and support staff in developing the situational analysis was also impossible to reconstruct accurately. This analysis provides adequate information for a large part of Uganda and would only need to be repeated for areas that clearly differ from the districts included in it; the analysis is therefore considered a one-time cost.

**Table 10. Partner Staff Level of Effort, Uganda Intervention**

<b>Activity</b>	<b>Senior Staff (Equivalent Days)</b>	<b>Technical Support Staff (Equivalent Days)</b>
1. Advocacy and partnerships*	ND	ND
2. Situational analysis <sup>†</sup>	ND	ND
3. Inventory of private providers <sup>†</sup>	57	57
4. District-level planning meeting	2	0
5. Simulated visits	9	0
6. Selection/training of moderators	2	0
7. Negotiation sessions	21	0
8. Monitoring/support supervision	0	0
<b>Total</b>	81	57

ND = Not determined.

\* One time costs at national level; will need to invest effort at district levels for expansion to new districts.

<sup>†</sup> These were one-time costs for the three districts included in the original activity. If new regions differ significantly, they will need to be repeated in those areas.

The LOE for partner staff excluding the first three activities is 34 days or about 1.5 months of one senior staff. This intervention relies heavily on MOH staff; because our analysis did not include MOH staff time, there is an under-representation of the LOE required for these activities.

**Table 11. Direct Costs, Uganda Intervention**

<b>Activity</b>	<b>Uganda Schillings</b>	<b>U.S. Dollars</b>
1. Advocacy and partnerships*	ND	ND
2. Situational analysis <sup>†</sup>	ND	ND
3. Inventory of private providers <sup>†</sup>	16,010,000	8,426
4. District-level planning meeting	144,000	76
5. Simulated visits	3,728,000	1,962
6. Selection/training of moderators	716,000	377
7. Negotiation sessions	5,373,200	2,828
8. Monitoring/support supervision	1,500,000	789
<b>Total</b>	<b>27,471,200</b>	<b>14,458</b>
<i>Less 1-3 (one-time costs)</i>	<i>-16,010,000</i>	<i>8,426</i>
<i>Cost of expansion</i>	<i>11,461,200</i>	<i>6,032</i>

ND = Not determined.

\* One time costs at national level; will need to invest effort at district levels for expansion to new districts.

<sup>†</sup> These were one-time costs for the three districts included in the original activity. If new regions differ significantly, they will need to be repeated in those areas.

Table 11 presents the direct costs for the Uganda intervention. At the time of these activities, the exchange rate was approximately \$1 = 1,200 Uganda schillings. With 104 PMVs trained, the cost per PMV was about \$58. This relatively high cost per trainee would undoubtedly be greatly reduced as the level of intervention increases in scale.

## CONCLUSIONS

Considerable effort was spent in working with the Uganda MOH in developing a national strategy. A key building block in developing the strategy was a comprehensive situational analysis that was presented at a strategy development workshop with relevant decision-makers in government and at NGOs and private associations. The support of the MOH was an enabling factor in the success of the intervention.

The national strategy for utilizing the potential of private providers in child survival is one of other initiatives that the MOH launched to combat childhood diseases. Another significant activity is the home-based management of fever campaign. That intervention is based on the provision of pre-packaged, combination therapy of CQ and SP, free-of-charge at the community level through volunteer drug distributors. The HBMF intervention was initially launched in 10 districts and has become a national program. Even with accessible, free treatment, observations indicate that some caregivers still prefer to purchase malaria treatment from private providers.

Results from the ENP intervention to change PMV practices were generally excellent, but it is important to keep in mind that the evaluation survey was undertaken only about two months after the intervention. Further studies will be needed to determine the sustainability of the intervention. Results compare favorably with other strategies, showing increases of 2% to 73% (simple malaria) and 2% to 90% (complicated malaria) for recommending the correct medicine, and 0% to 68% and 2% to 47%, respectively, for recommending the correct dose. More importantly, this intervention achieved significant improvements in the difficult-to-influence areas of referral and recommending ITNs for the prevention of malaria. The approach was developed to bridge the gap between knowledge and practice, and the evidence suggests that it worked. A significant drop among PMVs recommending any medicine for simple malaria is cause for concern and one that we cannot explain. This will be looked into more closely in follow-on surveys.

One area of concern for implementation was the reliance on the district committee for decisions on the types of private providers that would be included in the intervention. The need to integrate the community into the program is essential, but we found that the committee is likely to be dominated by the chief of medical services for the district. So, rather than a community decision on how working with private providers might increase chances of appropriate malaria treatment for children, the committee decision may often be a reflection of a health professional's view of the merit of training PMVs.

The direct costs and LOE of non-government staff involved in the ENP intervention showed a relatively low LOE for non-government workers, since the intervention draws on MOH workers. The direct costs, of approximately \$6,000, compares favorably with other interventions. The cost per participant (\$58) is high, but it would almost certainly be substantially lower in a larger scale intervention.

A strength of the approach is the use of government workers, which increases the chances of sustaining and perhaps expanding the intervention. Potential problems, however, are that it requires considerable one-on-one time with PMVs, and it may be difficult to motivate government workers to take on these new, long-term responsibilities. These issues and those around the direct costs require further investigation to demonstrate effectiveness at scale.

## SUMMARY

Numerous reports have presented evidence that the first action of a large percentage of caregivers seeking treatment or advice for childhood illnesses in SSA is to visit a nearby drug shop (Adome et al., 1996; Amin, et al., 2003; Foster, 1995; Foster, 1991; Hamel et al., 2001; Marsh et al., 1999; McCombie, 1996; Mwabu, 1986; Mwenesi et al., 1995; Ruebush et al., 1995; Snow et al., 1992; Van der Geest, 1987). The “informal” drug shops may be licensed, but even so, drugs outside the scope of the license are usually available. This is one of the key reasons that governments generally shun PMVs as a group. The Uganda national strategy for private providers summarizes well the government’s predicament. “National polices do not recognize informal private practitioners as partners in public health programs. Regulation prohibits unqualified providers from practicing and hence, indirectly discourages effort to include them in child health programs. Moreover, health authorities fear that involving unqualified practitioners could be perceived as formal recognition and encouragement for them to continue their sub-standard practices” (Republic of Uganda MOH, 2002b). Even for countries facing the issue head on, like Uganda, there are no easy answers. In addition, PMVs and governments often mistrust one another, a situation that may cause difficulties on those occasions when working to improve PMVs’ practices is permitted.

Having gained national-level consent for limited implementation of promising approaches, the Nigeria and Uganda interventions moved forward with support of local governments, communities, PMVs, and in Nigeria with support of PMV associations. Both interventions, using somewhat different strategies for behavior change, reported significant improvements in key practices related to management of simple malaria, particularly providing the correct drug in the correct dose for malaria to caregivers of children under five with fever. The negotiation approach in Uganda also showed promise in the difficult area of changing practices related to how PMVs deal with severe illness in children. Both interventions are, however, only recently implemented, and so evidence of sustainability of these approaches is lacking.

Of the two approaches, the Nigeria intervention has shown the greatest promise for broad implementation. To date, about 1,600 PMVs have been trained in 11 LGAs in Abia State, serving a population of nearly two million. The Uganda intervention also has promise, but the dependence on government health workers may not be feasible. The untested idea of using PMVs as moderators and supervisors may help with scaling up and sustaining this intervention. The community played a large role in the Nigeria intervention, both as a partner in implementation and as the target of behavior change messages and activities.

Unfortunately, one of the key unanswered questions is the contribution that BCC activities, including mass media targeting caregivers, have on increasing appropriate and timely treatment of malaria in children. Educating the population on the correct actions and drugs certainly helps, but how much effort should be placed in those activities versus activities more directly targeting PMVs and their practices is an important gap in our knowledge. A related question is to what extent can PMVs be used for dissemination of information to communities. In this regard, a consumer survey in Abia several months after implementation of the PMVs’ training and launch of the PPAMs found that PMVs were the most common source of information (34%) about recently introduced PPAMs, with health workers the second most common (24%) and mass media third (18%). This indicates that PMVs represent a largely untapped resource for diffusion of health messages, particularly those that deal with treatment of childhood illnesses (Salami & Brieger, 2004).

A major concern around PMV practices is the quality and supply of drugs. This is perhaps the greatest advantage that franchising approaches have over other interventions that target PMVs (Mensah, Bruce, Eghan & Stanley, 2003; Ndomondo-Sigonda, Kowero, Alphonse, Hebron, Kihinga, Mbawasi, Shirima, Taylor, Heltzer, & Clark, 2003). The Nigeria intervention had fortunate timing and was able to promote high-quality PPAMs. The vendor-to-vendor approach (Tavrow, 2003) offers another possibility of working with a quality wholesaler, not only to improve practices but also to ensure quality and supplies of appropriate drugs.

In sum, the Nigeria and Uganda interventions add to the collective experience of working with the informal private sector. Some lessons are situation-specific, others are more general, and both will be useful in developing a better understanding of what combination of features work best in the different settings in SSA.

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## ANNEX A BREAKDOWN OF COSTS AND LEVEL OF EFFORT BY SPECIFIC ACTIVITIES: NIGERIA INTERVENTION

The costs below include the initial round of community-based training (August/September 2003) and the mop-up training (November 2003). A total of 832 patent medicine vendors (PMVs) were trained.

1. Advocacy. BASICS II Abia senior staff and national office staff met with:

- Primary health center (PHC) coordinators in two local government areas (LGAs)
- State Ministry of Health (SMOH) personnel

**Input:**

Senior BASICS II staff

*Level of effort (LOE): 2 Days (d) x 2 Senior-level staff*

2. Coordination with national and local partners. BASICS Abia staff worked with partners at the field level to coordinate activities.

➤ Society for Family Health (SFH)

**Inputs:**

- Planning Meeting: SFH national and state staff and BASICS state staff  
*LOE: .5 d x 1 Senior-level staff; .5 d x 2 Mid-level staff*
- Distribution network meeting: SFH and BASICS state staff  
*LOE: .5 d x 1 Senior-level staff; .5 d x 2 Mid-level staff*
- Coordinating meeting: SFH and BASICS state staff  
*LOE: .25 d x 1 Senior-level staff; .25 d x 1 Mid-level staff*

➤ PMV Association

**Inputs:**

- Abia State PMV executive chairman meeting: representative of three zones covering Abia State, state PMV representatives, BASICS state staff  
*LOE: .25 d x 1 Senior-level staff; .25 d x 2 Mid-level staff*
- Abia State PMV Association monthly meeting: PMV members. BASICS state staff  
*LOE: .25 d x 1 Senior-level staff; .25 d x 1 Mid-level staff*

➤ Catchment Area Planning and Action Committee (CAPAC) networking forum meetings to garner their support for the activity: planning/hosting initial meeting for chairman, secretary, and public relations officers from each of 15 catchment areas (~45 participants)

**Inputs:**

- Travel, snacks, lunch for CAPAC networking forum members

*Costs:*

38,330 N

- BASICS II state staff

*LOE: 1.5 d x 1 Senior-level staff; 1.5 d x 3 Mid-level staff*

NOTE: No additional expenses were involved in subsequent communications with the networking forum, which was done through the networking forum executive officers, who communicated with the networking forum members.

- Census worker identification. Worked through the CAPAC Networking Forum to have each CAPAC identify four members to work as census enumerators to identify and map directions to all of the PMVs in their catchment area.

**Input:**

Staff time to inform CAPAC of need to identify four community members to assist with census

*LOE: 0 (already covered in initial networking forum meeting)*

- Training census workers. Organized a one-day training for the census workers to cover their scope of work, interaction with PMVs, filling in forms, mapping location of shops, and reporting back.

**Inputs:**

- Staff time to organize and serve as trainers for meeting

*LOE: 2 d x 1 Senior-level staff; 2 d x 4 Mid-level staff*

- Transportation for participants

*Cost: (for buses)*

*7,420 N*

- Snacks and meals for participants

*Costs: 130 x 70*

*9,100 N*

- Conducting census. Provided support to census enumerators and supervisors to complete census.

Operational description: Each group of four enumerators from each catchment area elected a team leader. BASICS also hired six supervisors who were not active in the CAPAC, but who were from the same area to assist and act as checks on the work of the enumerators. The supervisors had access to motorbikes for transportation. The enumerators divided the catchment areas into quadrants and each day planned their work as two teams of two workers. At the end of each day, the supervisors reviewed the plan for the following day, collected and cleaned the data entry sheets from the team leaders, and delivered them to the BASICS office. They also spot-checked the coverage to ensure that the enumerators were doing a comprehensive job and reported back to BASICS any problems that they or the teams were encountering.

**Inputs:**

- Per diem or honorarium for 4 (enumerators)/catchment area (CA) for 5 days

*Costs: 700 N x 4 IEs x 15 CAs x 5 days*

*210,000 N*

- Per diem/honorarium for supervisors

*Costs: 900 N x 6 Supervisors x 5 days*

*27,000 N*

- Staff time to work with census workers throughout the census to clean and correct their forms

*LOE: 5 d x 1 Mid-level staff*

- Census data management. Checked and cleaned data from census workers; entered PMVs into database.

**Input:**

BASICS II staff

*LOE: 5 d x 4 Mid-level staff*

7. Identification of two PMVs in each of the 15 catchment areas as potential trainers. BASICS worked with CAPAC on criteria for selection to identify the most promising, dedicated PMVs to become trainers for other PMVs. BASICS selected 21 PMVs from the 30 candidates.

**Inputs:**

- Staff time to work with CAPAC to select PMV candidates  
*LOE: 0 – message passed through networking forum*
- Staff time to interview/select PMV candidate  
*LOE: 2 d x 2 Senior-level staff; 2 d x 2 Mid-level staff*
- Staff time to write/send out invitations to 21 PMVs to attend Training of Trainers (TOT)  
*LOE: 1 d x 1 Mid-level staff*

8. Identification of master trainers. BASICS staff with training experience were selected as the master trainers.

**Input:**

*LOE: .25 d x 1 Senior-level staff*

9. Training of master trainers. BASICS staff were trained as master trainers by the Health Communication Partnership (HCP) training designer.

**Inputs:**

- Planning with training designer  
*LOE: .5 d x 1 Senior-level staff; .5 d x 4 Mid-level staff*
- Practice training with training designer  
*LOE: 1 d x 1 Senior-level staff; 1 d x 4 Mid-level staff*
- Pre-test training  
*LOE: 2 d x 1 Senior-level staff; 2 d x 4 Mid-level staff*

10. Two-day TOT for PMVs. In this central component of the intervention, a total of 21 PMVs were selected for training. In addition, 1 CAPAC member from each catchment area attended, and the 4 officers of the networking forum. Thus, there was a total of 40 participants.

**Inputs:**

- Master trainers who conducted two simultaneous TOTs of 20 participants each  
*LOE: 2 d x 2 Senior-level staff (national office); 2 d x 4 Mid-level staff*
- Participants, facilitators, and trainers  
*Transportation: 34,200 N*  
*Snacks and meals: 24,500 N*
- Two facilitators (state and LGA MOH workers)  
*Costs: 1000 N x 2 Facilitators x 2 d 4,000 N*
- Materials for training – flip chart paper, pens, markers, training guide, certificates  
*Costs: 6,235 N*

11. One-day rehearsal for Community-based Training and Development of a plan of action – BASICS II conducted a one-day follow up meeting for the newly trained PMV trainers about one week after the training. At this meeting, they finalized preparation of training materials (flip charts) and scheduled their community-level training sessions. Key CAPAC members also attended.

NOTE: It is at this meeting that the 10 training teams were formed consisting of two or three trainers. Two strong trainers were paired. A weaker trainer was added to some of the groups (this was done so as not to cause problems by releasing the weaker trainers from the program).

**Inputs:**

- Staff time to organize and conduct meeting  
*LOE: 2 days x 4 mid-level staff*
- Snacks and meal for participants  
*Costs: 10,000 N*
- Transportation for participants (not provided, but suggest that it should be in future).

12. Organizing one-day Community-based Cascade Training of PMVs – in each catchment area, the CAPAC organized a training session for PMVs with support from BASICS II. CAPACs sent out invitations and worked with BASICS II to prepare site for training.

**Inputs:**

- Staff time and travel to work with CAPACs to send out invitations to groups of about 20 PMVs for each training session  
*LOE: 6 days x 1 mid-level staff to distribute 1,030 invitations*  
*Costs: Transportation: 10,000 N*
- Casual labor to assemble packets of materials for each PMV  
*Costs: 500N x 5 days x 4 casual laborers 10,000 N*
- Monitor community level training and transportation of IEC materials to sites.  
*LOE: 6 days x 6 mid-level staff*

NOTE: All training sessions were monitored by BASICS staff, but in some cases one person assisted with more than one simultaneously run sessions conducted in the same site.

*Costs: Transportation in project vehicle*

- PMV trainers transportation and per diem  
*Costs: 1,000N x 1 day x 2.5 trainers x 46 training sessions 144,850 N*
- Snacks and meal for all participants  
*Costs: 200N x 800 meals provided 240,000 N*
- Materials and miscellaneous  
*Costs: 70,900 N*

***Total Direct Cost 846,535 N***

*Exchange rate \$1 US = 130 N= \$6,512*

***Cost/PMV (832 PMVs trained) = \$7.83***

The exchange rate at the time of the intervention was approximately \$1 US = 130 Naira.

**ANNEX B BREAKDOWN OF COSTS AND LEVEL OF EFFORT BY SPECIFIC ACTIVITIES: UGANDA INTERVENTION**

This is a description of the implementation of the Education, Negotiation, and Persuasion (ENP) intervention in Uganda that included 104 participants from four sub-counties of Luwero District (Kinyogoga – 30; Kamira – 24; Makulobita –24; Ngoma – 26). All four of these were included in the earlier private provider inventory and in simulated visits.

Levels of effort (LOEs), rather than actual costs, are given for mid- and senior-level staff of the Ministry of Health (MOH), partners, and consultants hired to implement the intervention. Likewise, travel costs are not provided for those personnel, because the distances from the capital to the intervention areas vary greatly. An estimate of their per diem costs is provided. Figures are in Uganda shillings; at the time of this intervention, the exchange rate was approximately \$1 US = 1,900 Uganda shillings.

1. **Situational Analysis.** The MOH and Support for Analysis and Research in Africa (SARA) Project conducted a review of private providers’ role in the treatment of childhood diseases, consisting of an analysis of the types of drugs sold, type of facility, health qualifications of shop attendants, etc. (Republic of Uganda MOH, 2001).

**Inputs:**

Senior MOH and SARA Staff

*LOE: Undetermined*

**NOTE:** One-time expenditure

2. **Overriding Costs and General Description of Activities for Inventory of Private Providers.** This activity consists of the two activities outlined below. Two consultants, one senior-level and one mid-level consultant contracted by the SARA Project, organized the inventory. This included sensitization of district officials in three districts, training of one health assistant from each sub-county as data collectors, and implementation of the inventory in all 62 sub-counties in three districts (Luwero – 21; Ntungamo – 15; Rakai – 26). The District Assistant Drug Inspectors (DADIs) and Integrated Management of Childhood Illness District Focal Persons (IMCI-DFPs) not only served as assistant trainers and supervisors, but also assisted with data management for the inventory. Senior staff from SARA and the MOH synthesized the results and wrote a final report (Republic of Uganda MOH, August 2002a).

The general inputs for the SARA consultants who managed the inventory were as follows: approximately one month (20 working days [d]) of field work and about two weeks (10 d) completing data analysis and write-up. (LOEs for training activities are listed separately.)

**Inputs:**

*LOE: 30 d x 1 Senior-level consultant*

*LOE: 30 d x 1 Mid-level consultant*

*Per diem and lodging: 48,000 x 2 x 20 d 1,920,000*

Transportation (1 MOH vehicle)

*Fuel costs: 26,000 x 20 d  
52,000*

**NOTE:** One-time expenditure

3. **Training Inventory Interviewers.** SARA consultants served as the lead trainers for inventory interviewers, with the DADIs and IMCI-DFPs as assistant trainers. If future inventories are needed, it is projected that the DADIs and IMCI-DFPs with previous experience can serve as the lead trainers and the DADIs and IMCI-DFPs from the new inventory areas will serve as assistant trainers. The training for health assistants, one from each of the 62 sub-counties in the inventory, took place over two days.

**Inputs:**

Trainers costs

*LOE:*  $2 d \times 3 \text{ Training} \times 1 \text{ Senior Consultant}$

*LOE:*  $2 d \times 3 \text{ Training} \times 1 \text{ Mid-level consultant}$

Assistant Trainers (DADIs and IMCI-DFPs)

*Facilitator allowance:*  $5,000 \times 2 \times 2 d \times 3 \text{ Tngs}$  60,000

Participant costs (1 health assistant [HA] per subcounty)

*Transportation:*  $10,000 \times 62 \text{ HA} \times 2 d$  1,240,000

*Out-of-pocket:*  $6,000 \times 62 \text{ HA} \times 2 d$  774,000

4. **Inventory implementation.** Trained health assistants conducted the survey in each sub-county with the DADIs, IMCI-DFPs, and two BASICS II consultants acting as supervisors. The time needed to complete the inventory varied according to the size of the sub-counties, but the average was approximately seven days.

**Inputs:**

Supervisor costs (two SARA consultants)

*LOE:*  $7 d \times 3 \text{ districts} \times 1 \text{ Senior-level consultant}$

*LOE:*  $7 d \times 3 \text{ districts} \times 1 \text{ Mid-level consultant}$

Assistant supervisors (DADIs and IMCI-DFPs)

*Supervisor allowance:*  $15,000 \times 2 \times 3 \text{ dist.} \times 7 d$  630,000

Transportation (2 MOH vehicles):

*Fuel costs:*  $26,000 \times 2 \text{ veh.} \times 7 d$  364,000

Interviewer costs (1 health assistant [HA] per sub-county)

*Transportation:*  $10,000 \times 62 \text{ HA} \times 7 d$  4,340,000

*Interviewer allowance:*  $15,000 \times 62 \text{ HA} \times 7 d$  6,510,000

5. **Setting National Strategy for Utilizing Potential of Private Providers.** An ad hoc Working Group was charged with using the situational analysis and the inventory documents to develop a national strategy for private providers. The preliminary outputs of the Working Group were presented to a broader audience for feedback. The MOH ultimately approved and accepted the revised document as part of the national health strategy (Republic of Uganda MOH, 2002b).

**Inputs:**

Senior MOH Staff and Staff of Partners

*LOE:* *Undetermined*

**NOTE:** One-time expenditure

The preceding activities may be omitted from subsequent interventions. Inventories are needed, however, if a private provider intervention is to be launched in another country or in regions of Uganda where there are thought to be significant differences in the types of private providers (e.g., drug shops, clinics, ordinary shops) or in their role in the treatment of childhood illnesses. A possible alternative to a new inventory is to use health workers/health assistants in new areas to locate and invite the private providers to participate in the program. This approach has the advantage of being less costly and more streamlined. Two key drawbacks are that (1) some private providers may be missed and (2) information on the composition of different categories of private providers and information on the medical qualifications of shop attendants would not be available to help guide the district planning meeting.

6. **District Level Planning Meeting.** SARA consultants presented the inventory results in the districts to the ad hoc Working Group. In the future, the DADIs and IMCI-DFPs could do this. The ad hoc committee dealt with the following issues:

- Specifying the approaches that will be used for improving the private provider behaviors related to childhood illnesses. Decisions were made using the national strategy and the local inventory as guides (e.g., the issue of whether all attendants or only those with qualifications should be trained was addressed);
- Identifying the moderators (trainers) who will implement the negotiation sessions;
- Determining the geographic scope of the intervention;
- Developing the budget for the training of private providers;
- Identify local resources to support the training of private providers; and
- Setting a timetable for intervention.

The Working Group is comprised of the following individuals, their representatives, or comparable officials: District Chief Administrative Officer; Chairman LC5, Director of District Health Services; DADI; IMCI-DFP, District Health Inspector; District Health Educator; representatives from the health sub-district, such as the In-charge Health Sub-District (HC-4), or In-charge Health Center (HC-3 or 2); private providers; non-governmental organizations (NGOs) and community-based organizations (CBOs) working with private providers.

**Inputs:**

1-day meeting at District level (18 participants)		
<i>Lunch for Working Group:</i>	<i>3,000 x 18</i>	<i>54,000</i>
<i>Transportation: (for those not living in the district capital)</i>	<i>10,000 x 9</i>	<i>90,000</i>

The simulated visit is a core component of the negotiation approach. Results from this activity are used to specify key case management problems to guide the training process and to present concrete examples to the participants of private provider practices.

7. **Simulated Visit Training of Trainers (TOT).** BASICS II consultants prepared the training guide and the guide for simulated visit. This was then used to train the DADI and IMCI-DFP from the Luwero District.

**Inputs:**

Development of TOT and simulated visit instruments by BASICS headquarters and country staff

<i>LOE:</i>	<i>Undetermined</i>
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TOT: BASICS Senior Consultant

<i>LOE:</i>	<i>0.5 d x 1 Senior-level consultant</i>	
<i>Lunch</i>	<i>6,000 x 3</i>	<i>18,000</i>

8. **Training of Mystery Clients.** The DADI and the District IMCI-DFP select and train six individuals (usually nurses from the district) to conduct the simulated visits with a senior BASICS II consultant. The training took place over a two-day period.

**Inputs:**

<i>LOE:</i>	<i>2 d x 1 Senior-level consultant</i>	
<i>Facilitator allowance:</i>	<i>15,000 x 2 people x 2 d</i>	<i>60,000</i>
Participants		
<i>Transportation:</i>	<i>10,000 x 6 people x 2 d</i>	<i>120,000</i>
<i>Out-of-pocket:</i>	<i>4,000 x 6 x 2 d</i>	<i>48,000</i>
<i>Meals/snacks:</i>	<i>4,500 x 8 x 2 d</i>	<i>72,000</i>

9. **Simulated Visit Implementation.** Six mystery clients each visited 10 private providers to collect data on management of simulated cases of malaria, acute respiratory infection (ARI), and diarrhea. The DADI, IMCI-DFP, and BASICS II consultant served as supervisors.

**Inputs:**

<i>LOE:</i>	<i>8 d x 1 Senior-level consultant</i>	
Mystery clients (MCs)		
<i>Allowance:</i>	<i>30,000 x 6 MCs x 8 d</i>	<i>1,440,000</i>
<i>Transportation:</i>	<i>10,000 x 6 MCs x 8 d</i>	<i>480,000</i>
Supervisors		
<i>Allowance:</i>	<i>30,000 x 2 x 8 d</i>	<i>480,000</i>
<i>Transportation:</i>	<i>50,000 x 2 x 8 d</i>	<i>800,000</i>

10. **Simulated Visit Data Analysis.** Data collectors and supervisors analyze data manually, which is used in developing negotiation guidelines.

**Inputs:**

<i>MC and supervisor transportation:</i>	<i>10,000 x 6 x 1 d</i>	<i>60,000</i>
<i>MC allowance:</i>	<i>15,000 x 8 x 1 d</i>	<i>120,000</i>
<i>Supervisor allowance:</i>	<i>15,000 x 2 x 1 d</i>	<i>30,000</i>

Simulated visits (activities 7 through 10) may be omitted if this activity has previously been done in the country. This will streamline and reduce the costs of the overall intervention. The negative aspects are that the specific problem practices for the private providers in the intervention area will not be known, nor will local examples of these be available for the negotiation sessions. These problems will be of most concern where there is a large difference in the practices between private providers in the new intervention area and the one originally used for the simulated visit.

11. **Training of Moderators for Negotiation Sessions.** For the two-day training, there should be two or three individuals who work directly with the private providers in each subcounty. Moderators were identified from In-charge Health Sub-District (HC-4) and/or In-charge Health Center (HC-3 or 2) personnel. Facilitators for the training were the DADI and the IMCI-DFP, with the BASICS consultant supervising the training.

**Inputs:**

<i>LOE:</i>	<i>2 d x 1 senior consultant</i>	
<i>Facilitator allowance:</i>	<i>15,000 x 2 x 2 d</i>	<i>60,000</i>
Moderator		
<i>Transportation:</i>	<i>10,000 x 8 x 2 d</i>	<i>160,000</i>
<i>Out of pocket:</i>	<i>6,000 x 8 x 2 d</i>	<i>96,000</i>
<i>Accommodation:</i>	<i>15,000 x 8 x 2 d</i>	<i>240,000</i>
<i>Meals and snacks:</i>	<i>8,000 x 10 x 2 d</i>	<i>160,000</i>

12. **Invitation to Private Providers.** One health assistant from each of four subcounties personally visited each private provider to deliver the invitation and explain the objectives of the training. It was felt that a personal visit and explanation was necessary to overcome the suspicion among the private providers that this event might be used in some way to interfere with their work.

**Inputs:**

<i>Health assistant allowance:</i>	<i>30,000 x 4 x 1 d</i>	<i>120,000</i>
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13. **Negotiation Sessions with Private Providers.** Approximately 25 to 30 private providers were trained in each of the four subcounties in Luwero District. Two or three moderators facilitated each of the four negotiation training sessions, which were conducted daily from about 9 a.m. to 5 p.m. for three consecutive days. A DADI, an IMCI-DFP, and a BASICS II staff member supervised each negotiation session. (The four sessions were conducted in two sessions at different sites so that the supervisors divided into two groups to cover all four sessions.)

**Inputs:**

Supervisors (for 4, 3-day sessions)

<i>Allowance:</i>	<i>15,000 x 3 x 2 x 3 d</i>	<i>270,000</i>
<i>Transportation:</i>	<i>75,000 x 3 x 2 x 3 d</i>	<i>1,350,000</i>

Moderators (average 3 moderators/session for 5 sessions)

<i>Allowance:</i>	<i>15,000 x 3 mod. x 4 x 3 d</i>	<i>540,000</i>
<i>Transportation:</i>	<i>5,000 x 3 mod x 4 x 3 d</i>	<i>180,000</i>
<i>Meals/snacks:</i>	<i>3,500 x 3 mod x 4 x 3 d</i>	<i>126,000</i>

Private providers (total of 104 3-day sessions)

<i>Transportation:</i>	<i>5,000 x 104 x 3 d</i>	<i>1,560,000</i>
<i>Meals/snacks:</i>	<i>3,500 x 104 x 3 d</i>	<i>1,092,000</i>
<i>Supplies:</i>	<i>1,300 x 104</i>	<i>135,200</i>

The private providers received behavior change communication (BCC) materials at the end of the negotiation training, which included three posters: one each for malaria treatment and prevention, ARI treatment, and danger signs of serious illness in children. The cost of developing and reproducing these materials is not included in this analysis.

14. **Monitoring and Support Supervision.** The moderators and supervisors of the session conducted two supervisory visits to each private provider during the first 6 weeks. After that, visits were made to each private provider every quarter. It was assumed that each supervisor would be able to visit three or four private providers a day.

**Inputs:**

Supervisors: (8 Training Moderators + 2 Training Supervisors during 1st 6 weeks)

*Allowance:*  $15,000 \times 10 \times 3 \times d \times 2$  900,000

*Transportation:*  $10,000 \times 10 \times 3 \times d \times 2$  600,000

**TOTAL** **27,351,200**

Total of activities 1-4 (one-time expenses) - **15,890,000**

**Total of recurring costs for intervention** **11,461,200**

*11,461,200 Ug.sh./1,900 = \$6,032/ 104 participants = approximately \$58 per private provider trained*

**ANNEX C PRACTICE CONTRACT FOR CHILDHOOD: DIARRHEA, FEVER, AND ACUTE RESPIRATORY INFECTION**

**Private provider’s name:**

**Location/address:**

**Date:**

After discussion in the negotiation session, if you agree to perform the following tasks for every case of diarrhea among children less than five years of age, sign your initials next to the task.

**Diarrhea**

**I agree that for every case of diarrhea in children less than five years of age, I will:**

<i>Key Practices for Diarrhea</i>	<b>Private Provider’s Signature</b>
1. Check/inquire about signs of severe illness (danger signs), give/recommend fluids, and refer immediately if the child is severely ill.	
2. Inquire about blood in stool. If it is present: (A) give correct drug and explain to the caretaker how to give the drug to the child, or (B) refer the caretaker and child to a health professional.	
3. Inquire about diarrhea duration. If longer than two weeks, refer to a health professional.	
4. Determine if child is dehydrated; give oral rehydration solution (ORS) and refer accordingly.	
5. Recommend increased fluid intake and ORS for all cases of diarrhea. Explain how to prepare and give ORS to a young child.	
6. Recommend continuation of feeding/breastfeeding during illness.	
7. Check/inquire about fever and cough and difficult/fast breathing.	
8. Encourage caretaker to watch for signs that require urgent medical care; explain what those signs are.	
9. Ask if the child has received all vaccinations, if the child is less than two years of age. If not, recommend taking the child to complete vaccinations.	

## Fever

I agree that for every case of fever in children less than five years of age, I will:

<i>Key Practices for Fever</i>	<b>Private Provider's Signature</b>
1. Check/inquire about signs of severe illness (danger signs) and refer to a health professional immediately if the child is severely ill.	
2. Give/recommend correct antimalarial drug(s) in correct dose and for correct duration.	
3. Give/recommend paracetamol in correct dose, if there is a high fever, in addition to the antimalarial drug(s).	
4. Explain how the drug(s) should be given to the child.	
5. Recommend giving the child plenty of fluids.	
6. Recommend continuing feeding/breastfeeding during child's illness.	
7. Check/inquire about cough and difficult/rapid breathing and diarrhea.	
8. Explain how to watch for signs that require immediate medical care (referral).	
9. Give/recommend buying insecticide-treated bednets and advise the caretaker to let the child sleep under the net. Remind caretaker about the need to re-treat the net twice a year.	
10. Ask if the child has received all vaccinations if the child is less than two years of age. If not, recommend taking the child to complete vaccinations.	

## Cold/Cough

I agree that for every case of cold/cough in children less than five years of age, I will:

<i>Key Practices for Cold/Cough</i>	<b>Private Provider's Signature</b>
1. Check/inquire about signs of severe illness (danger signs) and refer to a health professional immediately if the child is severely ill.	
2. Check/inquire about difficult/rapid breathing. If present, refer to a health professional or give/recommend cotrimoxazole in correct dose.	
3. Explain how the drug(s) should be given to the child.	
4. Recommend giving the child plenty of fluids.	
5. Recommend continuing feeding/breastfeeding during child's illness.	
6. Check/inquire about fever and diarrhea.	
7. Explain how to watch for signs that require immediate medical care (referral).	
8. Ask if the child has received all vaccinations if the child is less than two years of age. If not, recommend taking the child to complete vaccinations.	

I agree to perform all the tasks I have signed next to for childhood diarrhea, fever, and cold/cough.

**Private provider's name:**

**Signature:**

**Moderator's/facilitator's name:**

**Signature:**

**Date:**