

# 5 Malaria



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**M**alaria kills about one million children each year, mostly in sub-Saharan Africa. Children under two and pregnant women are particularly vulnerable. In endemic areas, 25 percent of child mortality can be due to malaria.<sup>1</sup> Infection during pregnancy is also a major cause of maternal anemia, low birth weight, and miscarriages.<sup>2</sup> Malaria control efforts should be part of safe motherhood, newborn, and child survival programs.

## THREE INTERVENTIONS

WHO emphasizes the importance of three interventions:<sup>3</sup>

- Children and pregnant women should sleep under insecticide-treated bed nets (ITNs)
- Pregnant women should receive intermittent preventive drug therapy (IPT) as part of standard antenatal care
- Children who have fever should be treated “presumptively” for malaria with appropriate drugs

Eighteen African heads of state committed themselves to achieving 60 percent of national coverage for each of these interventions by 2005. Roll Back

<sup>1</sup> Black et al. 2003.

<sup>2</sup> Steketee et al. 2001.

<sup>3</sup> This paper does not discuss environmental strategies. However, WHO and USAID also support indoor residual spraying (IRS) and larval control. The technical consensus is that IRS is suited for areas of unstable malaria (not year-round), epidemic prone malaria, in urban settings, and in refugee camps. (See USAID 2005.)

Malaria (RBM)<sup>4</sup> was formed to support countries in achieving these goals and to reduce global malaria burden by 50 percent by 2010. Reaching the targets will be a challenge. However, this high-level commitment and the current interest of donors has raised the profile of the disease and is assuring attention to a range of interventions.

In endemic countries, malaria prevention and control are usually coordinated through a national program and may receive substantial donor help. RBM has helped almost all countries in Africa develop comprehensive malaria control strategies. (Countries who apply for support from the Global Fund for HIV/AIDS, Malaria and Tuberculosis must have integrated strategies.) Coordinated efforts are young though, and strategies are under constant pressure to evolve. Drug resistance is a critical problem requiring ongoing attention to both policies and products. Behavior change and communication programs need to keep abreast of these changes and help caretakers as well as providers avoid confusion.

Insecticide-treated nets are relatively new in most countries. Complementary strategies for different segments of the population are necessary to make the product accessible and affordable to those who are most vulnerable while encouraging the growth of a sustainable market. Programs have been preoccupied with delivery challenges and with adjusting the cost of nets (through social marketing schemes for example). Some of the complex behavioral issues involved in acquiring, using, and retreating ITNs have received much less attention. Effective behavior change and communication approaches are critical to assuring ITNs are used appropriately.

Treatment of child malaria is in many ways “joined at the hip” with two other high-mortality health problems: diarrheal disease and acute respiratory infections. The three diseases have overlapping symptoms and in fact often occur together. Many careseeking and treatment issues are common to all three—from the need to recognize symptoms and danger signs, to the challenges of counseling and compliance and referral. Preference for treatment in the private sector is another familiar challenge that expands the range of priority actors and audiences.

While child survival programs often recognize that community-based approaches are crucial for treating all three childhood illnesses, efforts are rarely integrated (See also Chapters 4 and 5). In malaria-endemic areas, both careseeking and treatment strategies may highlight fever and give insufficient emphasis to symptoms of ARI, in particular. Community-based programs managers, as well as communication planners, have special roles to play in assuring selected key practices are lean and well targeted so that the ultimate goal of integrating child survival strategies at the local level can be achieved wherever possible.

The discussion below is divided into two parts: *prevention* and *treatment* of childhood malaria.<sup>5</sup>

## MALARIA PREVENTION— INSECTICIDE-TREATED NETS

### Supply and Demand—a Not So Simple Balance

Insecticide-treated nets can reduce child deaths up to 17-23 percent.<sup>6</sup> However, access to ITNs is a major challenge in most countries. Usage varies from 2

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<sup>4</sup> Roll Back Malaria was launched in 1998 by the World Health Organization, UNICEF, UNDP, and the World Bank to provide a coordinated international approach to fighting malaria. RBM is a global initiative made up of more than 90 partners.

<sup>5</sup> Intermittent preventive therapy for pregnant women is part of safe motherhood programs and is not discussed here, although this is an important area for integration with newborn interventions.

<sup>6</sup> Lengeler 2004.

percent in some countries to about 70 percent in urban areas of Tanzania. Overall, fewer than 10 percent of African households now own even one treated net.<sup>7</sup> A number of USAID and other programs are working hard to make ITNs available and affordable to families. A major task for governments and donors is to balance *supply* and *demand creation* activities for multiple population segments and often for different products and through different delivery mechanisms.

Roll Back Malaria has outlined a strategic framework for scaling up ITN programs based on a mix of private and public sector strategies that should evolve as the commercial market expands.<sup>8</sup> The goal is to make nets available to entire populations on an equitable and sustainable basis. At any given time the market for nets—and the government’s approach to subsidizing them for those who are most vulnerable—may include several components. For example, ITNs may be sold at reduced prices in antenatal clinics or by community-based groups; vouchers for ITNs may be distributed at clinics or by large employers; and free nets or vouchers may be distributed during campaigns. Similarly, retreatment kits are sometimes sold in shops and also distributed free during measles campaigns or child health weeks. Community retreatment campaigns may be held on National Malaria Day or other occasions.

Behavior change and communication efforts must therefore be versatile but sensitive to the overall balancing act aimed at national coverage. And although “acquiring the net” may be the overriding aim of a given strategy, *demand creation* activities for a distribution system in one geographic area should be

sensitive to repercussions in a neighboring area with different (or no) distribution systems, and should not overshadow attention to complex issues of *use*.

## ITN Use—a Not So Simple Behavior

Key family practices for insecticide-treated nets are:

- Acquire the ITN
- Treat the net before using if necessary (e.g., if it comes bundled with a treatment pack)
- Hang the ITN in the home and use it *every night*
- Make sure pregnant women and children under five sleep under the net(s)
- Retreat the net periodically, depending on the type of net and according to the type of insecticide treatment available<sup>9</sup>
- Replace the net when it becomes torn or deteriorates (after about 3–4 years)

Retreatment is itself a complex behavior and represents an even greater challenge to date than use of nets *per se*.

Most programs so far have emphasized the first step—*acquire the net*. Some evaluations of ITN programs are still focused on “nets distributed” or “household net ownership,” rather than “nets used by targeted individuals the previous night.” Much less common are studies measuring actual behaviors in the home or examining constraints and enablers connected to the different aspects of *use*. Further studies of this nature will make important contributions to behavior change programs in the coming years.

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<sup>7</sup> Hill et al. 2001.

<sup>8</sup> WHO 2002 (c). (It is estimated that approximately 32 million nets and 300 insecticide treatments are required by vulnerable groups per year in Africa, representing from \$US 450–600 million. The cost of nets therefore prevents developing country governments from providing them free to all of those in need.)

<sup>9</sup> Most ITNs have to be treated every six months or more often depending on how often they are washed. Long-lasting insecticide-treated nets (LLINs) remain potent for about 20 washes or the entire life of the net, so they do not have to be retreated. LLINs were recently certified by WHO but are not yet widely available or affordable in Africa.

## Creating a “Net Culture”

Malaria experts talk about the importance of building a “net culture”—making ITNs familiar and desirable. Most African families are a long way from thinking of sleeping under a treated net as “normal,” whether or not they own one. Even the very poor spend money on coils and sprays to prevent nuisance biting. However, they often don’t understand the connection between mosquitoes and malaria—particularly those that bite at night—and hence the value of ITNs. Even in some countries where net use is a tradition (for example in the Gambia, Mali, Niger, or Burkina Faso) use of *treated* nets is a new concept.

Generic demand creation for ITNs is a first step in those countries. Communication strategies have focused on improving knowledge of essential facts:

- Mosquitoes cause malaria
- Mosquitoes that bite at night are the only cause of malaria
- Malaria is a serious, potentially fatal disease
- Children under five and pregnant women are most vulnerable
- Malaria transmission can take place year round

In Tanzania, communication research found that most people linked mild malaria with fever (and called it “malaria”) and around 76 percent of people associated it with mosquitoes.<sup>10</sup> But it was perceived as a normal illness that could not be prevented. Symptoms of severe disease were associated with other local illness categories and not connected to either “malaria” or mosquitoes. The promotion effort for ITNs therefore built on the major perceived benefit of nets—i.e., preventing nuisance biting—and also repositioned malaria as a disease that kills and can be prevented.

USAID’s NetMark project found that in multi-country research, the attribute people most valued in a mosquito control product was *killing mosquitoes*. However, nets were not associated with killing mosquitoes, so the promotional strategy attempted to make that link with ITNs. The tagline “Mosquitoes Kill: Kill Mosquitoes,” was added to ads about ITNs.

Research is necessary to understand what people are presently doing to kill mosquitoes (in other words, the products that *compete* with ITNs), what they like about them, and how to *position* treated nets as a superior product. Costed out over several seasons, ITNs may not be more expensive than products people are already using, but they require a larger single outlay of money. One task is to position the net as a superior product and a necessity rather than a luxury. An ITN is a valuable investment and is worth putting some money aside for.

Getting the price right is one of the ongoing preoccupations of programs that subsidize nets. Some donor-supported strategies have focused on bringing down the price of ITNs so that they eventually “sell themselves” and little demand creation is thought necessary. In most programs, however, cost is a potential barrier for some portion of the target population. This increases the importance of several “secondary” audiences. Although the pregnant woman or mother may qualify for the net, messages should also be directed at male household members who usually make purchase decisions and also influence who actually sleeps under the net. The ITN provider—whether a shopkeeper or a nurse in an antenatal clinic—is also in position to influence both the purchase and the use of the net.

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<sup>10</sup> Minja et al. 2001.

## Common Barriers

Formative research in a number of countries has shown that common barriers to the purchase and correct use of ITNs fall into several categories:<sup>11</sup>

### *Acquiring the Net*

- Cost of the ITN
- Availability of income (often lowest during malaria season)
- Availability and convenience of net outlets
- Familiarity with sprays and coils (no “norm” to try a net)
- Focus on killing mosquitoes – but no understanding that the ITN plays this role

### *Sleeping Under the Net*

- Husband has priority for sleeping under the net (since it is valuable and expensive)
- Perception that a net is hot
- Net is difficult to hang and inconvenient (especially if people sleep outside or if children sleep in different places at different times)
- Fear that children may damage or tear the net
- Fear that child (especially a baby) might suffocate
- Belief that malaria is seasonal and net need only be used during certain times of the year

### *Fears About the Insecticide*

- Fear that the smell will make a pregnant woman nauseated
- Fear that chemical may cause miscarriage or damage to the fetus
- Fear that chemical will harm children, especially if they bite or suck on the net

- Fear that chemical is bad for people with allergies or asthma

### *Net Treatment/Retreatment*

- Retreatment is messy, requires equipment, is a “bother” to do, and may seem poisonous
- Retreatment kits are hard to find

People need to hear safety messages from those they trust. These may be health providers, manufacturers, community and religious leaders, or testimonials from users.

ITNs have many attractive features beyond their role in malaria prevention. Potential enabling factors for use include the facts that ITNs:

- provide a good night’s sleep
- provide privacy in close quarters
- protect babies from other insects (like flies)
- kill many insects (head lice, bedbugs, cockroaches)
- can be *easy* to hang (if different ways are demonstrated)
- protect against dust and dirt falling from the ceiling
- provide decoration

Among the studies that have looked at actual use of ITNs in the home, two of the most common behavioral problems are lack of use *year long*, and low use *by young children*. Formative research should always include a special look at potential determinants of these practices and how correct use can be encouraged.

Ongoing program monitoring is important for understanding what happens to nets once they reach families. Who sleeps under these nets and how often? When are nets washed and when are they retreated? What are the differences between doers and non-doers? How many nets actually stay in the family? Free and

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<sup>11</sup> NetMark 2001.

subsidized ITN programs must be vigilant about “leakage” to non-target groups and the possibility of a black market.

### **Timely Reminders and Building Skills**

Initial promotion of ITNs has included broad use of mass media, road shows, posters, billboards, and other public channels. These media efforts create public awareness and raise the perceived value of treated nets. Negotiation within the family and specific knowledge and skills are also needed. Systematic message strategies should focus on timely reminders and instructions for identified vulnerable groups. ITNs are not “regularized” into health protocols in most countries. The pregnant woman’s health card may be stamped at the ANC when she receives a net but there is not likely to have been any blank space there reminding her and the provider that she needed one. The same is true of the child health card—there may be no reminder for ITN use even though the child is expected to sleep under one and may have his or her card stamped at a mass distribution. Simple but systematic changes in standard materials can contribute to a change in norms within the health system.

Any parent who brings a child into the health system (especially for treatment of fever) should be reminded that the child should be sleeping under an ITN. Facilities and community workers should be able to tell families where nets are available. Providing instructions about correct use is a larger challenge. Some countries have promoted key practices through women’s groups and demonstrations at market places and other public events. However, face-to-face instructions and personal reminders are key to reinforce who should sleep under the net and when and how soon the net should be retreated.

### **Communication Issues and Opportunities Vary by Delivery Strategy**

Behavioral challenges, influencers, and message strategies will differ according to how ITNs are delivered in a given community. Below are four common delivery strategies and the behavioral issues associated with them. These strategies are not exhaustive but represent typical models communication planners involved in child survival may be asked to support.<sup>12</sup>

#### *Subsidized ITNs Sold at Health Clinics*

In some countries ITNs can be purchased by pregnant women or parents of children under five at public health clinics. Population Services International (PSI) manages such programs in several countries. Supplies often sell out within a few days under such schemes, so those who live farther away may be less likely to get nets. Monitoring in the target area should pay special attention to those who are *left out*. Special communication strategies may have to be aimed at this group.

The presence of nets at the health center helps *promote their purchase* and also provides a good opportunity for health workers to *explain their use*. The amount of time a provider has with the client is short though, and made even shorter on distribution days by the logistics of managing sales. Brief exit interviews can confirm whether women receiving ITNs understand basic messages about correct use. Results can be used to consider ways of improving health worker interaction. Just as a drug should not be distributed without some assurance of “compliance,” ITN distribution should be accompanied by instructions and reminder materials.

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<sup>12</sup> Seidel 2004.

As with any “piggybacked” activity, *unintended effects* may be felt on the regular health system. PSI believes there are no negative consequences on attention given to other ANC tasks, for example, during the days ITNs are distributed. However, observations as well as exit interviews are important to confirm that services and counseling (for example on newborn care) are still adequate on these days.<sup>13</sup>

### *Coupons/Vouchers for ITNs Distributed at Health Clinics*

This approach is similar except beneficiaries receive vouchers for the full or partial cost of an ITN instead of the net itself, and no money exchanges hands at the clinic. There is less burden on providers, since commercial outlets assume the tasks of securing, storing, and selling the ITNs. There should also be less danger of voucher supplies running out, hence less danger of those living far away being left out. Vouchers, like nets, can also act as a “draw” to the clinic. And they create a logical moment for counseling on ITN use.

The concept of a voucher may be unfamiliar in some communities and the presence of vouchers may not be as noticeable a draw as actual nets. A pilot voucher scheme in Tanzania connected with antenatal clinics encountered problems with both cost and promotional issues.<sup>14</sup> Two years after the start of

## **EVOLUTION OF A NATIONAL ITN STRATEGY IN TANZANIA**

Tanzania has promoted insecticide-treated nets through several different delivery systems requiring very different communication strategies. These have evolved according to the expansion of the local commercial market, allowing Tanzanians to benefit from both the public health and the economic benefits of ITN distribution and sales.

**Social Marketing Product** Communication research helped lay the groundwork for a subsidized ITN product, named “Zwia Mbu,” or “Prevent Mosquitoes.” Mass media and person-to-person promotions in health centers positioned the product as preventing malaria and saving lives, as well as providing a good sleep during peak biting hours. Nets were originally imported from Thailand but then purchased from Tanzania’s own ITN manufacturers.

In 1997, the KINET program (managed by the Ifakara Health Research and Development Centre) was launched in two districts. Health workers, shopkeepers, and religious leaders all sold the subsidized ITNs. Most ITNs were purchased at small retail shops, however. The program intensified promotion of retreatment kits when monitoring showed these were not selling well.

In three years time, coverage of infants by ITNs rose from under 10 percent to more than 50 percent. ITNs were associated with a 27 percent increase in survival among intervention area children aged one month to four years.

**Voucher Trial and Expansion** Because Tanzania has a healthy commercial market for ITNs, the country was able to launch a national subsidized voucher program in 2003 to take the place of subsidized net distribution. Pregnant women receive vouchers for discounts on ITNs when they visit the ANC, and mothers receive vouchers for retreatment kits when their children are immunized.

The national rollout was preceded by a communication campaign promoting the new voucher system and highlighting *who* is eligible (pregnant women and children under five).

*Sources: Minja et al. 2001; Mushi et al. 2003; National Malaria Control Programme 2003; Schellenberg et al. 2001.*

<sup>13</sup> PSI has recently completed an in-depth study of provider behaviors in Malawi.

<sup>14</sup> Mushi et al. 2003.

distribution only 43 percent of qualifying women had heard of the scheme and 12 percent said they had received and used a voucher. None of the poorest women in the area had redeemed a voucher. Based on this experience, a national voucher program has increased the amount of the subsidy and will actively promote the *concept* of a voucher (and details about the ITN distribution) widely among the general public.

In contrast, word got around very quickly about a pilot voucher scheme in Zambia.<sup>15</sup> Retailers also made sure mothers knew where they could redeem vouchers and competition for sales drove prices of two products down within a few weeks time. A crucial communication tool is *a list of participating shops*. Every mother should receive the list with her voucher. This must be kept up to date to avoid the appearance of favoritism and to encourage competition. In this pilot, the coordinators supplied participating stores with promotional signs and program logos as both a seal of quality and a tracking device.

Voucher schemes have highlighted the role providers may have to play in encouraging women to *save money* in order to redeem the voucher, or to *negotiate* any remaining cost with *their husbands*. In Zambia, about 75 percent of vouchers were redeemed within 30 days. About 8 percent of women said they did not have enough money and another 8 percent said they were waiting for their husbands to support their acquiring the ITN.

This approach depends upon good collaboration with the private sector to encourage expansion and a steady supply of quality ITNs.<sup>16</sup> The *retailer* should also be prepared to answer questions about net use and remind clients that nets have to be retreated. Only two

countries so far (Tanzania and Uganda) are in the process of launching national ITN voucher programs and their lessons will be useful.

### *Subsidized ITNs Sold Through Community-Based Groups*

Community-based groups (village health committees or groups sponsored by NGOs) may coordinate distribution of ITNs to women with poor access to the health system. Exposure to generic ITN messages is less likely in these remote areas. This means good behavior-oriented training for the community workers who promote and distribute the nets is especially important.

This approach, like others, must also include a plan for promotion of *retreatment* and supply of insecticides. The behavioral “package” is large and may be a challenge for community-based groups, especially when ITNs are still a new concept. Formative research to understand what the specific barriers are and monitoring to assess actual use is especially important in hard-to-reach areas where living arrangements, decision-making, and preferences may be less well understood.

### *ITNs Distributed Free During Campaigns*

UNICEF and the Red Cross have both been active in piggybacking free distribution of ITNs with measles campaigns and other intensive events. ITN distribution can help increase demand for other services. In Ghana, 24.8 percent of those who came to vaccination posts distributing free ITNs during a measles campaign in 2002 said they were motivated by the promise of the net.<sup>17</sup>

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<sup>15</sup> Chimumbwa & Mwenesi 2003.

<sup>16</sup> This document does not attempt to deal with the important challenge of motivating shopkeepers to participate in a voucher program or to carry and distribute ITNs. The NetMark Project and voucher programs in Tanzania and Uganda are addressing these questions.

<sup>17</sup> Grabowsky unpublished.

Campaigns involve strategic issues that require careful communication planning. There may be social or political repercussions in surrounding areas that do not get ITNs. In Ghana some parents in neighboring areas did not bring their children for measles vaccinations when they heard their communities would not receive nets.

Campaigns allow little time for personal messages. Only the basic information can be conveyed: i.e., the net is to prevent malaria; it is for the child or the pregnant woman; it should be used every night regardless of the season; and it must be retreated every six months. Messages should also include where the parent can get a retreatment kit or when a community retreatment might be scheduled. Red Cross volunteers visited homes before the Ghana campaign and disseminated information about the ITNs. Messages about retreatment could not be shared because the campaign distributed both treated and long-lasting nets. Post campaign monitoring found that among those who said they received an ITN, 60.2 percent said their youngest child slept under it the previous night. This gap may have been due to the fact that the campaign took place during the dry season or it may indicate a problem targeting under-fives. Around 11 months after the campaign about 2 percent of households had sold their nets.

Message planning for providers is easily overshadowed by the many logistic challenges of a mass distribution. However, since ITNs are still a relatively new product, pretesting of messages is always important to avoid confusion. During an ANC-based campaign in one East African country some pregnant women interpreted the message—"the net is for the infant"—literally and saved the net until the birth of their baby.

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<sup>18</sup> Schellenberg et al. 2002.

<sup>19</sup> Chavasse et al. 1999.

## Retreatment Practices and Messages

Retreatment is sometimes considered a downstream issue to be addressed seriously once the problems of making ITNs available and affordable have been resolved. In fact, retreatment is central. After six months, most nets are no longer potent if they are not retreated. Even the best programs achieve only 30 percent retreatment of nets distributed.<sup>18</sup> This is partly due to insecticide kit supply problems, and partly a lack of adequately intensive promotion in most places.

Ideal *treatment* as well as *retreatment* practices vary according to the product and also the program. This means a universal treatment/retreatment "message" is usually not possible. Some programs distribute nets after an initial treatment; some are "bundled" with a treatment kit to be used in the home. Most nets have to be retreated about every six months depending on how often they are washed. Retreatment options include:<sup>19</sup>

- Dip-it-yourself kits
- Community retreatment campaigns (bulk dipping at a central location)
- Fixed retreatment services (individual goes to a commercial outlet)
- Temporary retreatment centers (e.g., on market days)
- Mobile retreatment services (entrepreneur visits homes)

Retreatment is inexpensive and in theory should be easier than acquiring a net and sleeping under it every night. In fact supply, demand, and correct use are all problems. Few shops carry the retreatments even where nets are available. Even a small cost seems to be a barrier. Several programs have achieved high rates of

treatment through free promotions, but these rates then dropped when charges were introduced. In Ghana retreatment rates were up to 77 percent when supported by the government but dropped to 14 percent when families were asked to pay.<sup>20</sup> Some programs have distributed the kits free (at measles campaigns for example). However, *home retreatment* has so far proved a difficult behavior to promote.

In early net success countries (Viet Nam, China) retreatment was organized on a community-wide basis and funded by the government. The Eritrean government set up semi-permanent retreatment centers located at health facilities and other locations where people can bring nets shortly before the malaria season. Three zones recently achieved retreatment rates of 78 percent, 61 percent, and 52 percent, respectively.<sup>21</sup>

Retreatment is an important focus for creative planning and promotion. Local retreatment campaigns can be organized by the health sector (for instance as part of Africa Malaria Day activities), can take place at schools, or can be sponsored by civic groups (the boy scouts for example).

Treatment/retreatment can also be viewed as a *primary* rather than a *secondary* behavior. While most people still do not have nets, many do have curtains or bed covers. These can also be safely dipped and will kill mosquitoes.<sup>22</sup> A six-year study in Burkina Faso found that treated curtains reduced child mortality 19-24 percent.<sup>23</sup> Some experts have suggested that treatment of curtains may be more feasible than ITN use in some kinds of homes.<sup>24</sup>

## CARESEEKING AND PRESUMPTIVE TREATMENT OF CHILD MALARIA

### Key Practices and the Pressures of Drug Resistance

Managing childhood malaria requires recognition of symptoms and prompt careseeking to make sure the child is given the *right drug*, at the *right time*, and in the *right dose and duration*. Access to antimalarials and to good information and counseling about dosage are key factors in both effective treatment and in managing the problem of drug resistance. Community careseeking patterns and preferences about providers—especially for those in the private sector—complicate this challenge.

Families must also recognize *signs of severity* and get help from a skilled provider without delay. A child with severe malaria can die within 48 hours. “Treatment failure” is a common problem in areas with high resistance to the first-line drug. Providers need to anticipate this and families need to understand that this is not the same as “provider failure.” Effective communication strategies and tools for both families and providers are especially urgent in this context. *Trust* is important as well as *knowledge* and *access*.

The key steps in malaria case management outlined in the box on page 91 highlight the interconnectedness of supply and demand challenges. They also highlight the fact that simple malaria may become severe malaria (resulting in at least two visits to a provider and two rounds of treatment) and that a caretaker may go to several providers. The critical communication issues and target audiences will depend

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20 Hill et al. 2001.

21 Roll Back Malaria 2002.

22 Ansari 2002.

23 Diallo 2004.

24 Roll Back Malaria 2002.

## MANAGING CHILD MALARIA

Key practices for managing child malaria include actions by both the family and a skilled provider:

- Caretaker recognizes signs and symptoms of malaria—*especially fever*
- Caretaker understands malaria requires immediate and complete treatment with an appropriate antimalarial
- Caretaker has access to immediate care—*and seeks care without delay*
- Caretaker provides adequate home care—*right dose of antimalarial for right number of days*
- Caretaker brings sick child to skilled provider for care—*caregiver recognizes/acts on specific danger signs*
- Informal service provides adequate care and/or referral—*including counseling on home management and compliance*
- Formal service provides adequate care—*including counseling on home management and compliance*
- Caretaker complies with appropriate treatment and/or referral
- Referral facility provides quality care
- Ongoing review of case management protocols conducted to ensure protocols and practice reflect known resistance levels with corresponding effective and adequate drug supplies available.

Source: CORE 2003.

(Details in italics have been added)

on the model for *access* in a given area. Each program must design its own list of key practices for both caretakers and providers based on drug policies, what is feasible in a given setting, and what will save lives.

### Advocating for Access

Access to appropriate drugs is essential for prompt care. In much of Africa, children can die from malaria episodes before they reach health services. Promoting specific *policies* to increase access to drugs and counseling may be an essential step toward improving *careseeking* and *caregiving*.

Studies have shown that it is feasible to scale up effective programs stressing *home-management* of child malaria.<sup>25</sup> Roll Back Malaria emphasizes the importance of assuring that parents have access to treatment within 24 hours, and promotes strategies that bring “the hospital to the home.” *Community-based workers* who are trained to provide counseling and/or referral as well as drugs have played an important role in improving compliance to drug regimens.<sup>26</sup> Improved packaging (especially “pre-packs”) of drugs and dosage instructions have also been strongly linked to better treatment practices as well as compliance.<sup>27</sup> Another important approach is to improve the prescribing and counseling behaviors of *private practitioners* (when they are already treating a large percent of cases). Depending on local careseeking patterns, one or more of these strategies may be crucial areas for advocacy among policymakers.

### Identifying Symptoms

The need to bring “the hospital to the home” to treat child malaria reflects the high mortality of malaria in

<sup>25</sup> WHO 2002(b).

<sup>26</sup> Ibid.

<sup>27</sup> Some programs are also supporting drug franchise shops, etc. to assure a supply of drugs close to the community.

some areas, the frequency of illness (a child might have several episodes in a year) and the urgency of access to drugs. It also reflects the assumption that parents are already likely to recognize, or can be taught to recognize, at least certain symptoms and associate these with malaria. In this sense malaria is usually considered less complex than ARI, for example. Most successful ARI programs have been based on *case-seeking* models (see chapter 6).

### *The Key Sign of Simple Malaria is Fever.*

A child with fever should be given an antimalarial without delay.<sup>28</sup> In malaria endemic areas fever is “presumed” to indicate malaria. Fever is recognized by virtually all cultures as a sign of illness, although families may or may not associate it with malaria.

### *The Signs of Severity Are:*

- Convulsions
- Coma or lethargy/change in consciousness
- Fast or difficult breathing
- Vomiting everything
- Unable to eat or drink

The first two signs are more common with malaria. The third is more common with ARI, which often overlaps with malaria (or can be mistaken for it). Many studies have shown the symptoms of severe malaria are easier to recognize by both families and providers than those for severe ARI or diarrhea, and families do act on them. Understanding how parents interpret these signs, when and where they go for care, and how they actually treat the child, is the first major task of a behavior-based program.

## **Understanding Careseeking and Caregiving**

Families in some communities immediately associate fever with simple malaria. Others apply home remedies or acquire herbal medicines. Even those who recognize a link between fever and malaria may associate severe symptoms with other diseases, however. Convulsions, twitching, and coma are often linked to supernatural causes and families may seek help from a traditional healer. A taxonomy of local illnesses and related treatments can help explain when and why parents give certain remedies or consult specific providers. Caregivers will often go to first one provider and then a second or a third if the child does not improve. The formal health system may figure into this pattern very late or not at all. Parents may also believe they have several options for treating a child but go directly to a drug vendor or pharmacist if they have the money, in order to save time.

The speed of treatment may also be determined by decision-making processes in the family. A male family member usually makes decisions involving cost. In Ghana, convulsions indicate a special condition that requires a male family member to consult with ancestors through a soothsayer. Understanding the reasons for *delay* is always crucial.

Illness narratives are a useful methodology for analyzing what people actually do and what the specific barriers are to desired practices.<sup>29</sup> Communication programs can easily waste effort teaching families what they already know or trying to promote a behavior that is simply not feasible in view of strong competition from other practices. Ideally, formative research can help determine what the program emphasis should be rather than just how messages should be designed or

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<sup>28</sup> Treatment of simple malaria can also include giving an antipyretic or tepid sponging to bring down the fever. However, the evidence base for these practices is mixed and recommendations may change (see Hill et al. 2001).

<sup>29</sup> Baume 2002 (a); Baume 2002 (b).

## A BASIS FOR MESSAGES AND PROGRAM DECISIONS

Research on *careseeking practices in Zambia in 1998* provided the basis for recommendations at multiple program levels.

**Simple Malaria** Mothers were keenly aware of fever as a sign of malaria. They went to the health center for free drugs or to drug vendors if they had money and purchased chloroquine (at that time the first line drug).

Many mothers gave their children incorrect doses of antimalarials even when they had been to the health center. Moreover, health workers often gave mothers partial doses. Exit interviews revealed 40 percent of mothers had not understood instructions about medications.

Some mothers did bring “treatment failures” back to the health center but health workers often did not ask what drugs had already been given, and so gave chloroquine once again rather than a second-line drug.

The research recommended changes at multiple levels:

- A change in policy so that mothers would receive the full course of drugs

- A dosage chart posted for everyone in the health center with a reminder to give the full treatment
- A graphic dosage card for nonliterate caregivers
- Training in basic communication skills for health workers dispensing drugs
- Allowing community health workers (CHWs) to give first-line drugs since mothers understand the signs of simple malaria

**Severe Malaria** Mothers recognized convulsions and even recognized twitching as a precursor to it. However, they often went to traditional healers for treatment. The study therefore recommended *working with healers* to encourage referrals to the health center.

**Messages for Mothers** Key messages for mothers focused on the amount of medication to give, the importance of completing the dose, signs indicating treatment failure, and the urgency of going to the health center if a child begins to twitch or convulse.

*Source: Baume 2002 (b).*

what communication channels should be used. In-depth research, even on a small scale, can be invaluable in determining program policies.

### Provider Practices

The role of the skilled provider is to “assess the child, classify, treat, and refer.” The provider must be able to use local terms to ask about symptoms and to find out whether the case is severe and requires referral. He or she should also ask how long the fever has lasted and what drugs and other remedies the child has received.

This is the only way to know whether the case represents a “treatment failure” and may require a second-line drug.

The most crucial messages concern how to give the appropriate drug and what to do if the child doesn’t get better. Counseling should include:

- Details about the medicine and the importance of giving the full dose
- What to do if the child vomits (a replacement dose may be necessary)
- Symptoms of severity

## WHEN FAMILIES DON'T VISIT THE HEALTH CENTER

Illness narratives gathered in Kenya in 1998 revealed that around 90 percent of children with malaria were first treated at home, and many *only* at home. To some extent pharmacies replaced health centers for diagnosis and treatment advice. The short waiting time and the absence of a consultation fee were key benefits. If symptoms persisted, most families visited a variety of providers and gave multiple drugs.

**If home treatment failed**, about half of mothers went to the health facility within one to three days. However, the study found that providers did not ask where mothers had already gone or what they had given the child. Providers typically recommended several drugs (including an antipyretic). Exit interviews at health facilities showed that only 25 percent of caregivers could explain how to give the medications. Fewer than half gave the correct dose.

**Promoting the second line drug** In contrast to Zambia (see box page 94), mothers in Kenya did not recognize twitching as serious, and often not even convulsions unless the child actually lost consciousness. Moreover, mothers found Fansidar (the second line drug at the time) too expensive to purchase and most did not like it because it does not reduce fever as fast as chloroquine.

These factors all added up to a serious problem for children whose treatment with the first-line drug failed. The study recommended specifically promoting the benefits of Fansidar as a second line drug and also reminding mothers not to give additional antimalarials. The national malaria control program also subsequently conducted a successful pilot program for pharmacists in order to improve their prescribing practices (see box page 99).

Source: Baume 2002 (b).

- What to do if the child doesn't get better (return/referral)
- Advice on continuing fluids and feeding during recuperation

A child who has severe malaria may need treatment at a referral facility (see box page 95).

A diagnosis of malaria should always go hand-in-hand with advice to the parent about the need for children to sleep under an ITN. Ideally the provider can tell the parent where and how to get one that is affordable.

Exit interviews and observations can help reveal prescribing problems as well as gaps in counseling. Well-designed job aids such as dosage charts, treatment posters, and counseling cards can support provider behaviors. Studies have found that even in government health facilities there may be confusion about basic treatment protocols. Counseling and dosage instructions to parents can be reinforced with simple graphic reminder materials.

## Compliance, Drug Resistance, and Communication

Drug resistance complicates the behavioral challenges of any program:<sup>30</sup> Seeking treatment and getting the *right drug* are only the first steps.

### Importance of Completing the Dose

A parent often stops giving prescribed medicines as soon as the child starts to feel better. The remaining medicine is saved for a subsequent illness. In some countries caretakers pay the full cost of drugs even

<sup>30</sup> Resistance to Chloroquine (CQ), the first-line antimalarial for many years, is now widespread. Increasing resistance to sulfadoxine-pharmethanine (SP)—known also by the trade name Fansidar™—is also being documented. WHO now recommends that all countries experiencing resistance to their first-line antimalarial therapy change to an artemisinin-based combination therapy (ACT). Each of these therapies is progressively more expensive, and supply of ACTs is also a challenge. Shifts in drug protocols have many repercussions beyond cost (including retraining and motivating change by health workers). (See USAID 2005.)

## HOW TO MAKE REFERRAL WORK

Referral is a notoriously weak link in managing illness and a challenge for families and communities.

The local health system and the community can work together to support a child who has been referred. One review of community-based programs identified the steps a community health worker can take to facilitate referral. The CHW can:

- Actively counsel the parent on the need to take a child to referral facility
- Inquire about barriers to taking the child
- Link parent to sources of funds (for careseeking)
- Link parent to transport
- Accompany family to a referral facility
- Give first dose before referral
- Fill out referral slip
- Record the referral in a register

Every program that includes referral should at a minimum promote the use of *referral* and *counter referral* slips so that parents are given priority at the referral facility and the original provider receives feedback and can follow up on the case. *Verbal instructions* on the need for referral and where and how to get there are also crucial.

The community can also identify ways to support severely ill children. A common element of Safe Motherhood programs is collective action to identify emergency transport and set up emergency funds. These systems can be extended to children.

*Source: Gilroy et al. 2004 (draft).*

at the public health center; in others only the first dose is free. Non-compliance can seem both logical and economical to the family.

An important focus of communication efforts is to make sure parents understand the importance of completing the *full course of drugs* whether they receive them from skilled providers, pharmacists, drug vendors, or CHWs. Studies have shown that compliance *can* be significantly improved with good counseling, carefully pretested instructional materials, and dose-specific packaging. Not surprisingly, the greater number of these elements combined in a program, the greater effect on compliance.

### *Discussions about Treatments*

In some communities a high proportion of parents bring their children to the health center only when they have already tried other treatments and these have failed. Many children who reach the clinic may be cases of drug resistance. However, this is not always the case. In contrast, a study in Tanzania found that parents often brought their children to the health center first but would switch to traditional remedies if the prescribed drugs failed. Discussions with parents about treatment must anticipate both scenarios. The provider must always ask about *previous* remedies, and also warn parents that *if* the child doesn't improve within a day or two they should *come back* for further treatment.

### *Support for Changes in Policy/Antimalarials*

Few countries escape having to change first-line drugs at some point. Special communication efforts are needed to support these shifts. Different drugs require different doses and offer different benefits and side effects. Costs also vary, which has implications for the health system, pharmacies, and families. Providers need to be fully prepared and understand the need for the changes. A change in protocols should be supported by new dosage charts, Q&A sheets to help providers warn families of changes and answer questions, and revised reminder materials for caretakers.

## Products, Packaging, and Instructions

Several programs have shown that compliance may be improved dramatically by changing product packaging and sometimes the product itself.

In some countries syrup is often prescribed for children under five. The family may have to bring or find their own bottle. Measuring out doses for the right number of days can lead to errors on the provider's part. Both under- and over-dosing by parents are common. A program in Ghana improved prescribing practices as well as compliance by shifting from syrups to pills and prepacking these in the clinic's dispensary with a simple heat-sealing machine.<sup>31</sup> An evaluation found that overall compliance was 43 percent for syrups and 92 percent for tablets. Most parents preferred the tablets even though they had to crush and dissolve them for the child. The new system also reduced waiting time in the clinic by more than half.

In parts of Ghana, as in many countries, drug dispensing by community volunteers has been simplified by distributing pre-packs produced by a pharmaceutical company. A white pack printed with an image of a crawling infant (for ages 6-11 months) and a yellow pack with the image of a walking child (for children up to six years) were easily understood by volunteers and parents. Infants received syrups or pieces of the standard tablet. The CHWs in this study were trained to treat both malaria and pneumonia and also dispensed cotrimoxazole—in pink pre-packs.<sup>32</sup>

In Uganda, pre-packaged antimalarials are distributed free through community drug distributors. The pre-packs are produced at the national level.

Distributors are trained in symptom recognition and refer severely ill children. This is one of the few programs that is planned for scale-up to a national level. (By July of 2004 it had been launched in 30 of 56 districts.) The percent of children receiving treatment within 24 hours has risen from 46 to 54.4 percent in initial program areas. The percent of those receiving the recommended treatment rose from 9 to 50 percent.<sup>33</sup>

Good product *instructions* are as important as a convenient product. A number of programs developed simple pictorial inserts explaining how to administer antimalarials. An intervention in Nigeria looked at the effect on compliance of both an improved insert and improved verbal instructions. The evaluation showed compliance was 36.5 percent for the control; 51.9 percent among parents receiving the insert; and 73.3 percent among those also benefiting from the improved instructions.<sup>34</sup>

## Strengthening Community-based Strategies

Roll Back Malaria recommends home-based management of fever in order to help families avoid potentially fatal delays in treating children. A number of interventions have shown that community health workers, including volunteers with low levels of education, can be trained to educate parents, to diagnose simple and severe malaria, to dispense drugs, and to affect compliance.

As for ARI, models range along a continuum—from activities focused on education, assessment, treatment, and referral; to distribution of antimalarials

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<sup>31</sup> Yeboah-Antwi et al. 2001.

<sup>32</sup> WHO 2002 (a).

<sup>33</sup> WHO 2002 (a).

<sup>34</sup> Okonwo et al. 2001.

(at low or no cost); to case management directly by families.<sup>35</sup> Training must target a few key behaviors and messages. CHWs must practice using tailored job aids that help them diagnose, treat, and counsel parents. Unlike ARI, malaria does not require active case-seeking by providers. Parents do have to know who offers services and find these providers credible. Good relations with the health system are also key, especially where referral is involved. The drug supply must be reliable. Specially packaged drugs have been particularly important in these programs.

### *Education and Assessment*

Community volunteers have been effective in improving careseeking for simple malaria. In programs when they have multiple responsibilities, CHWs are often more effective with regard to malaria than they are in changing behaviors regarding diarrheal disease or ARI. For example in Indonesia, a two-year intervention involving community volunteers conducting education at monthly health posts and carrying out home visits improved careseeking rates for fever from 26 to 57.7 percent.<sup>36</sup> No change was seen in careseeking for ARI or in giving fluids during diarrhea.

### *Treatment and Distribution of Drugs*

A central concern of ministries of health is whether community workers can dispense antimalarials correctly. Again, CHWs have been more successful in treating malaria than other diseases. In Kenya, CHWs treated 90.5 percent of “moderate” malaria cases adequately in contrast to 50 percent of ARIs. However

they recommended the correct dose in only 66.7 percent of malaria cases. The integrated program did bring about earlier treatment seeking and a 49 percent reduction in child mortality four years after implementation began.<sup>37</sup>

Supervision is critical to CHW performance. In the Kenya program, supervisors did not perform any better than the CHWs. In contrast, supervision played a strong role in a similar program in the Sudan. Supervisors from health facilities received the same training as CHWs and visited them every two weeks, observing performance and providing feedback on case management. During the program’s first year, CHWs treated 63 percent of fevers correctly; in the next two years they treated 99 percent correctly.<sup>38</sup> Recognition of dangers signs also improved over time.

A program in the Tigray region of Ethiopia from 1996-1998 provides the now classic evidence that community volunteers who focus on both educating mothers and providing drugs can reduce child mortality. The program trained mother coordinators to teach women in their own communities to recognize symptoms of malaria and promptly treat children with antimalarials available from the volunteers. The coordinators were trained with special treatment charts and they also gave black and white versions of these to families to post in their homes. After the first year of the intervention, overall child mortality dropped by 40 percent.<sup>39</sup> In the intervention area, 19 percent of child deaths were due to malaria, in contrast to 57 percent in the control area.

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<sup>35</sup> So far there are no successful examples of programs that allow families to assess and treat their own children. A program in the Gambia found that despite an educational campaign, 64 percent of mothers interviewed said they would give the antimalarial for severe cough, 38 percent for severe diarrhea, and 23 percent for ear discharge. (Menon et al. 1988.)

<sup>36</sup> Gilroy et al. 2004 (draft).

<sup>37</sup> Ibid.

<sup>38</sup> Ibid.

<sup>39</sup> Kidane et al. 2000.

### *Improving Referral*

Referral is usually the weakest element of a CHW program (see box page 95). In Mali, referral of severe cases by managers of community drug kits improved following introduction of a referral book and refresher training. Parents of referred children actually took the referral book with them to the facility (where details about treatment were added) and returned it to the community drug kit manager after treatment. One year after introduction of the record books, referral of severe cases rose to 42.1 percent in the intervention group as compared to 11.2 percent in the control. Of those referred, 87 percent actually arrived at the health center.<sup>40</sup>

### *Integration with Treatment of Other Child Illnesses*

The overlap among malaria, ARI, and CDD is a strong argument for integrated assessment and treatment. Because parents recognize and seek care for fever, CHWs known for treating malaria may easily “pull in” children who have ARI. One can also argue that because community-based malaria activities are often supported by national programs (whereas ARI and CDD activities are not) they have a special responsibility to expand algorithms and training. (For more on ARI, see Chapter 6).

### *Monitoring and Going to Scale*

Ministries of health need evidence that community-based programs are improving care and are not leading to an increase in drug resistance. Simple record keeping of cases and treatments can form the basis of good

monitoring. Periodic reviews can highlight prescribing problems. Whenever possible these reports should be fed into the regular health information system. Although many community-based programs are initiated and supported by NGOs, they can only be sustained if they are accepted and eventually integrated into the health system. A steady stream of information on CHW activities and results improves the chances these programs will eventually be absorbed and brought to scale.

### *Working with Private Providers*

Very few mothers go first to public health providers for treatment of malaria-related symptoms. From 50 to 70 percent of children who die never come in contact with the health system.<sup>41</sup> The majority of early treatment for childhood fever is given at home using store-bought drugs. Despite this, efforts to improve communication with families about how to manage fever and give drugs have focused primarily on staff in the public health system.

A few countries have conducted successful interventions to improve both the prescribing behaviors of private providers and their communication with clients. Negotiating changes in prescription practices for malaria currently has several advantages over negotiating changes for other diseases. Programs do not have to convince pharmacists to sell a *cheaper drug* (such as ORS), and the recommended shift is usually toward *purchasing more* of a specific medication rather than less.<sup>42</sup>

In Kenya, dosage charts for shopkeepers, a novel prescription “stamp,” and practical training had a

<sup>40</sup> Winch et al. 2003.

<sup>41</sup> WHO 2004.

<sup>42</sup> As countries promote use of ACTs, both availability and cost will be significant barriers to their adoption and use in the private sector for at least the short to medium term. There are major shelf-life issues with all available ACTs, so stock management will be critical. New concerns introduced by ACTs will be dosing (particularly in places where co-formulated products are not used) and issues around drugs' toxicities. (Lawrence Barat, personal communication)

dramatic impact on correct use of both antimalarials and antipyretics.<sup>43</sup> The study found that shopkeepers were willing to adopt a more advisory role with their clients as long as the new practices did not reduce their income. The training also raised their status in the community (see box at right).

One common challenge in working with private providers is to find an efficient mechanism for scaling up. A second program in Bungoma, Kenya, worked with drug wholesalers and their detailers to reach shopkeepers.<sup>44</sup> The vendor-to-vendor strategy demonstrated the efficiency of drug detailing as a way to reach scale. Seventy-three wholesalers worked with their own shop attendants and mobile vendors to promote proper use of SP as the (newly adopted) first-line drug in approximately 450-500 private drug outlets. Communication tools included a shopkeepers job aid and a client awareness poster. Vendors also reviewed malaria symptoms, treatment advice, and dosage charts. With relatively little “external” input, the public/private partnership improved rates of appropriate prescriptions to greater than 50 percent in the intervention area as compared to 21 percent in the control.

In Nigeria, training of patent medicine vendors (PMVs) was coordinated with the launch of new pre-pack antimalarials. The program scaled up its model during a second phase by collaborating with the professional Association of PMVs (see box page 100).

Other challenges in working with private providers include establishing a monitoring

## TRAINING PHARMACISTS IN KENYA

**In rural Kenya where pharmacies have almost replaced health centers for preferred malaria treatment, a study of prescribing practices found that shopkeepers rarely asked questions about the child or provided any information about proper doses. Only 4 percent of children in the target area who were given over-the-counter (OTC) antimalarials received an adequate total dose.**

**Training and materials** Between 1998 and 2001, the Ministry of Health and the Kenya Medical Research Institute launched a training program for drug retailers serving a population of around 70,000. The initial four-day training was supplemented by on-site observations and annual one-day refresher workshops. Participants received dosage charts for both antimalarials and aspirin/paracetamol. Another novel communication tool was a collection of rubber stamps depicting the correct doses for children of different ages. Training also covered symptoms of severity and referrals. After the first year, the Ministry's drug protocol shifted from chloroquine to SP, so that later workshops also focused on the task of introducing a new drug.

**Results** Training had a dramatic effect on practices of both shop keepers and purchasers of OTC drugs. After training, the proportion of children receiving OTC antimalarial drugs who received an adequate dose rose from 8 percent to 64 percent. Overall, the proportion of children whose fevers were treated with shop-bought drugs and received an adequate dose of the recommended antimalarial *within 24 hours* rose from one to 28 percent during the intervention period.

The most difficult challenge was convincing parents to give any antimalarial, as opposed to an antipyretic. Many children were receiving dangerously high doses of aspirin. This was confirmed by reports by the District Hospital of cases of severe salicylate toxicity. After training, potentially toxic doses dropped from 22 percent to 2.9 percent.

*Source: Marsh et al. 2004.*

<sup>43</sup> Marsh et al. 2004.

<sup>44</sup> Roll Back Malaria 2002.

## INTEGRATING PRIVATE SECTOR TRAINING WITH PRODUCT PROMOTION

In Nigeria, training of commercial drug sellers to improve prescribing practices was integrated with the launch of new pre-packed antimalarials.

Communication strategies promoting the new product also highlighted its availability from patent medicine vendors (PMVs) who had received the training.

**Collaboration with the Community** In the first phase, USAID's BASICS II project worked through community/government planning groups known as Catchment Area Planning and Action Committees (CAPAC). Each CAPAC includes 20-30 community representatives who advocate for health-related resources and supervise community health promoters. CAPACs serving a total population of around 750,000 helped identify over 800 PMVs operating in their local areas to receive training.

Program staff first conducted a training-of-trainers for selected PMVs followed by one-day workshops organized by the CAPACs in their own areas. Training for PMVs emphasized signs and symptoms of malaria, treatment of children under five with the appropriate first- or second-line drug, referral of children with severe illness to the health facility, and use of ITNs.

**Communication Materials** The program designed materials for shopkeepers and their outlets. These included job aids, treatment guidelines, a dangler identifying the shops where someone had completed the course, a shop sticker with the program logo, and a certificate of

completion. Radio and billboards also publicized the training. (USAID's HCP project managed the communication program.)

**Product Promotion** The workshops were coordinated with the launch of prepacked chloroquine and SP through an extensive media campaign including radio spots, billboards, and road shows. Two detailers managed distribution of the prepacks to PMVs in the program area. Prepacks were also supported through USAID (via PSI/SFH).

**Results** In January of 2004, four months after the intervention began, the percent of PMV clients given the correct dose of antimalarial rose from 9 to 53 percent. PMV knowledge of continuous vomiting as a sign of severity rose from 32 percent to 71 percent; knowledge of convulsions rose from 11 to 45 percent. Unexpected results included a drop in referrals for severe cases and an increase in recommendations for other antimalarials. The program staff believe this last outcome may be due to increasing drug resistance in the intervention area and awareness of PMVs about the problem.

The program was scaled up in other areas through collaboration with the Association of Patent Medicine Vendors. In both models, collaboration with the local and state government officials was considered a key to acceptance by the health system and the PMVs.

*Source: Greer et al. 2004.*

system and sustaining changes in practice over time. To date most programs have been one-time efforts and involved intensive training (often on a pilot scale) and no long-term follow up.

## Summary

# Malaria

**B**ehavior change approaches can contribute to both prevention and control of malaria. Major interventions include:<sup>1</sup>

- Use of insecticide-treated nets (ITNs) by pregnant women and children
- Case management of childhood fevers
- Intermittent preventive therapy (or “IPT”—for pregnant women, to protect them and the fetus)

In malaria endemic areas, child survival programs will focus on the first two interventions. Attention specifically to *newborn health* should also include links with programs focusing on IPT. That intervention is usually managed by safe motherhood programs (and is not discussed here).

## PREVENTION: INSECTICIDE-TREATED NETS (ITNS)

### Audiences and Actions in a Nutshell

#### Families

- Acquire ITNs and use them correctly:
  - Pregnant women and children sleep under ITNs every night
  - Family retreats the ITN about every six months

— Family replaces the ITN after about three years.

- The pregnant woman or mother may have to *acquire the ITN* and is the target user, along with young children
- But husbands are likely to *supply the money* and they must *support ITN use* by these more vulnerable family members

#### Health Workers and Community-based Volunteers

- Promote ITNs at key moments (ANC visits, when child is treated for malaria)
- Give mothers information about how/when to use ITN (correct use)
- Remind mothers ITNs must be retreated

#### Shopkeepers

- Give mothers (or other purchaser) information about how/when to use ITN
- Remind purchaser ITNs must be retreated

#### Community Leaders, Organizations

- Organize and promote retreatment “events” (as well as promote ITN use)

<sup>1</sup> See footnote 3 on page 81 about environmental measures such as larval control and indoor residual spraying (IRS).

### *Policymakers*

- Reduce taxes and tariffs on netting and include treatment kits in essential drug lists

### **What are the Key Challenges?**

ITNs are still a new product as well as a new concept in many countries. Formative research is necessary to understand how to position the product and also understand the behavioral challenges and tailor strategies for particular delivery systems.

- Many families do not understand the connection between malaria and night-biting mosquitoes. They also prefer more familiar products (like aerosols, coils, or traditional methods) for killing mosquitoes.
- ITNs are not widely available and affordable.
- Programs may be focused on access and cost and give little attention to correct *use*.
- Programs may be preoccupied with ITNs and not give sufficient attention to *retreatment*.
- Even where ITNs are available, retreatment kits may not be.
- Behavior and communication challenges (for families as well as providers) will vary according to the local delivery system for ITNs/vouchers. Common models include:
  - Subsidized ITNs sold at health clinics
  - Coupons/vouchers for ITNs distributed at health clinics
  - Subsidized ITNs sold through community-based groups
  - ITNs (or vouchers) distributed free during campaigns
- Communication experts may be asked to support pilot efforts (e.g., large distribution ITNs from a

donor on Malaria Day) or to piggyback onto an immunization campaign with little time to analyze specific behavioral issues or plan beyond demand creation.

### **How Can Communication Approaches Contribute?**

#### *Research*

- Conduct research to understand the “competition” and how to position ITNs as a necessity rather than a luxury, as well as key factors regarding *use* in the home and *retreatment*.
- Anticipate and monitor “unintended effects” of demand creation activities (on piggybacked interventions such as ANC or EPI, and on families in nearby areas with no supply of ITNs).

#### *Families*

- Position ITNs vis a vis the competition (ITNs kill mosquitoes, prevent malaria).
- Design messages to raise the value of ITNs (not a luxury item but a necessity to be saved for).
- Design communication strategies to promote a “net culture” (ITN use will be seen as the norm).
- Inform families where/how they can get ITNs (or vouchers and how to redeem them).
- Promote (and measure) correct *use* by key target audiences (pregnant women and children).
- Promote (and measure) ITN *retreatment* (see box page 103)

#### *Communities*

- Encourage local innovation related to treatment promotion strategies (e.g., organize at a central location on National Malaria Day, incorporate in Boy Scout badges, etc.)

## It's the *Insecticide*— Not Just the Net!

**After about six months (depending on the number of washings) ITNs lose their potency.**

*Retreatment* with insecticides is essential. But many communication programs have considered this behavior a “down-stream” issue, focusing on getting families to *acquire* ITNs.

**Every ITN-promotion strategy must be paired with a retreatment-promotion strategy.**

Countries that have achieved high retreatment rates (such as Viet Nam and China) focused on *community* strategies. On specified dates, families are encouraged to bring their nets to a central location for “community dipping.” This is fertile ground for innovative community and communication strategies.

### *Health Workers and Community-based Volunteers*

- Support providers with simple job aids/message guidelines tailored to a specific delivery channel.

### *Shop Keepers*

- Promote involvement in voucher programs where relevant.
- Create point-of-purchase materials and reminders/flyers regarding retreatment.

### *Advocacy*

- Support efforts to reduce taxes and tariffs on net materials and insecticides where these still exist.
- Promote increased attention to *retreatment* strategies, as well as demand creation for ITNs.
- Support efforts to promote both sustainability and equity of ITN availability (a *long-term strategy* for supplying ITNs to all segments of affected population) rather than piecemeal efforts.

## TREATMENT: CASE MANAGEMENT OF CHILDHOOD FEVERS

### **Audiences and Actions in a Nutshell**

#### *Families*

- Recognize signs and symptoms of malaria and seek treatment promptly.
- Give the right antimalarial, in the right dose, for the right number of days.
- Recognize signs of severity and seek appropriate help promptly.

#### *Private Sector Drug Suppliers*

- Sell the right antimalarial in the right doses for children with fever.
- Ask about signs of severity and refer to a health center.

#### *Community-based Volunteers*

- Ask about previous treatments (to identify treatment failures) and signs of severity.
- Give or sell the right antimalarial in the right doses for children with fever.
- Recognize signs of severity and refer to a health center.
- Recommend the child sleep under an ITN.

### Health Workers

- Ask about previous treatments (to identify treatment failures) and signs of severity.
- Give the right anti-malarial in the right doses for children with fever.
- Recognize signs of severity and treat or refer.
- Recommend the child sleep under an ITN.

### Policymakers

- Support strategies that bring treatment closer to families (working with private providers, allowing community health workers to dispense drugs, supporting pre-packing)

### What are the Key Challenges?

Careseeking studies have shown that behavioral challenges vary greatly by country and region, and formative research is always necessary to identify primary challenges. Common challenges include:

- Parents may not understand the signs and symptoms of *severe* malaria, and may delay seeking appropriate treatment
- A large proportion of parents may seek malaria treatment in the *private sector*—but most programs focus on *public* providers. (And no private provider programs have reached scale.)
- Private providers often over-prescribe antipyretics and under-prescribe antimalarials; they rarely ask about signs of severity.
- Parents often give inadequate doses, contributing to antimicrobial resistance.
- Due to drug resistance, treatment failure is a common problem. Yet providers rarely ask about previous drug use.
- Referral systems for severe cases are weak.

- Changes in drug policies create confusion among both providers and families.
- Policymakers may be reluctant to promote treatment in the private sector or to give drugs to community health workers.

### How Can Communication Approaches Contribute?

#### Research

- Conduct formative research on careseeking patterns for simple and severe malaria as well as

### Dealing with Drug Resistance

**Drug resistance has made chloroquine and now SP ineffective against malaria in much of the world. “Caretaker compliance” is typically viewed as the problem. But are other actors and behaviors involved?**

Many providers (whether public, private, or volunteers) fail to give parents clear instructions on the proper dose and duration for a child’s treatment. Written instructions may be lacking, or poor, or indecipherable to someone who isn’t literate. The *importance* of giving a full dose is often not emphasized—even if the *instructions* are given.

When *policies* change, even providers can become confused. Clear, written protocols need to be updated and shared. Q&A’s can help.

Convenient *packaging* is helpful. “Pre-packs” with graphic instructions can simplify the concept of “completing” a course of treatment.

“treatment failures.” Identify key problems and any corresponding provider or policy issues.

- Assess behaviors of *public providers* (through exit interviews, observations); identify key problems.
- Assess prescribing practices of *private providers*; identify barriers and benefits to ideal practices.

### *Families*

- Design strategies to promote careseeking from appropriate providers at the right times. Include messages to target the problem of treatment failures.
- Promote the importance of completing a full dose of antibiotics (the right drug, in the right dose, for the right amount of time).

### *Private Providers*

- Support training programs for private providers with skills-based approaches and materials.

### *Health Workers and Community-Based Volunteers*

- Create appropriate job aids (diagnosis and treatment charts, Q&A sheets). Target specific problems.
- Create training materials/approaches and job aids for community-based workers.
- Design and test referral and counter-referral materials to improve treatment of severe cases.
- Improve package design and graphic instruction materials for antimalarials (e.g., pre-packs).
- Create materials to support changes in drug policies (new dosage materials, Q&A sheets).

### *Advocacy*

- Promote strategies that bring treatment closer to families (working with private providers, allowing community health workers to dispense drugs, supporting pre-packing).

