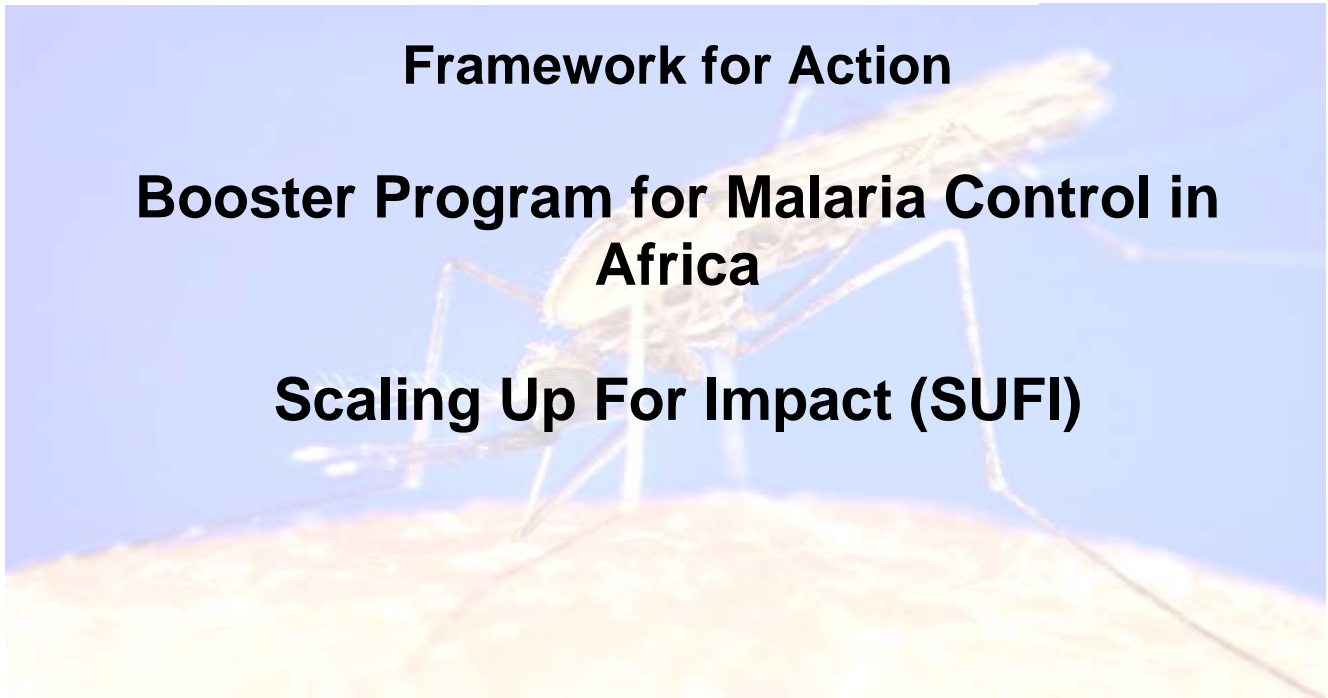


PART – 1

The Booster Program



WORKING PAPER

For Donors' Conference

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ACRONYMS AND ABBREVIATIONS

ACT	Artemisinin Combination Therapy
AFREX	World Bank's External Affairs Office for the Africa Region
AFTHD	World Bank's Human Development Department for the Africa Region
BCC	Behavioral Communication for Change
CDD	Community Driven Development
CQ	Chloroquine
ESSD	Environmentally and Socially Sustainable Development
HIPC	Highly-Indebted Poor Country
DALY	Disability Adjusted Life-Year
HMM	Home Management of Malaria
GFATM	Global Fund to Fight AIDS, Tuberculosis, and Malaria
HAMSET	Combined HIV/AIDS, Malaria, Sexually Transmitted Infections, and TB control project (World Bank)
IDA	International Development Association
IEC	Information, Education, and Communication
IFC	International Finance Corporation
IOM	Institute of Medicine
IPTI	Intermittent Preventive Treatment for Infants
IPT	Intermittent Preventive Treatment
IRS	Indoor Residual Spraying
ITNs	Insecticide Treated Nets
LLINs	Long-Lasting Impregnated Nets
MDGs	Millennium Development Goals
MIRT	Malaria Implementation Resources Team
MERG	Roll Back Malaria Monitoring and Evaluation Resource Group
NGO	Non-Governmental Organization
NMCP	National Malaria Control Program
OPCS	Operational Policy and Country Services
PERs	Public Expenditure Reviews
PPME	Policy, Planning, Monitoring, and Evaluation
PRSP	Poverty Reduction Strategy Paper
PRSC	Poverty Reduction Support Credit
RBM	Roll Back Malaria Global Partnership
RLT	World Bank's Africa Region Leadership Team
SP	Sulfadoxine Pyrimethamine
SWAps	Sector Wide Approaches
TTL	Task Team Leader
UNICEF	United Nations Children's Fund
WHO	World Health Organization
WHO/AFRO	WHO's Regional Office for Africa

EXECUTIVE SUMMARY

Malaria kills over 1.1 million people—most of them children under five years old—every year.^{1,2} More than 80% of these deaths occur in sub-Saharan Africa. The Commission for Africa notes that: “malaria is the biggest killer of African children, and half those deaths could be avoided if their parents had access to diagnosis and drugs that cost not much more than US\$1 a dose.”³ Pregnant women and their unborn children are particularly vulnerable to this disease and it is a major cause of perinatal mortality, low birth weight, and anemia.

As noted by WHO, malaria’s public health impact is compounded by high economic costs.⁴ In Africa alone, the total yearly economic burden of malaria is estimated at about US\$12 billion. Comparative figures reveal even more clearly how malaria undermines economic development. Annual economic growth between 1965 and 1990 averaged only 0.4% in malarious countries, less than one-fifth of the figure for malaria-free nations, which grew an average of 2.3% per year over the same period (Sachs and Malaney, 2002). Although the disease is preventable and curable with available technologies, coverage with effective interventions has remained tragically low, particularly among poor and rural populations.

The present paper translates the recently-published World Bank’s Global Strategy and Booster Program into an outcomes-driven assault on malaria in Africa. As detailed in this document, the Booster Program is designed to augment and reinvigorate existing programs, and does not constitute an independent initiative. This effort will build on a revitalized Roll Back Malaria Global Partnership (RBM) and complement the efforts of other partners both at national and regional levels in an effort to bring malaria under control.

The Booster Program is planned to last ten years, including an intensive phase spanning the Bank’s fiscal years 2006–2008, meaning July 1, 2005 through June 30, 2008, during which the Bank will contribute to an aggressive effort to achieve control of malaria. The decade-long timeline reflects the difficulty of fighting this entrenched, deadly disease in Africa. It is important to stress that long-term financial and institutional commitments from governments and partners alike will be required to sustainably reduce malaria prevalence.

In the long-term, the program aims to contribute to the goals outlined in the RBM Partnership’s Global Strategy: halve malaria-associated mortality by 2010 and halve it again

¹ Roll Back Malaria. WHO and UNICEF, 2005. The World Malaria Report. Geneva, WHO, 2005.

² Malaria is a potentially deadly disease caused by infection with the *Plasmodium* parasite. *Plasmodium* is transmitted to humans through the bite of infected *Anopheles* mosquitoes. Four species of malaria parasites can infect humans: *Plasmodium falciparum*, the deadliest and most common form in sub-Saharan Africa, *P. vivax*, *P. malariae*, and *P. ovale*. Climatic conditions in the sub-Sahara are unfortunately favorable for highly efficient vectors such as *A. gambiae* and *A. funestus*. For further details see: www.who.int

³ Sylvia Meek. 2005. *Tackle Malaria Today Give Tomorrow a Chance*. UK House of Commons. All-Parliamentary Group on Malaria.

⁴ WHO/AFRO, Malaria Control Unit, Annual Report, 2004.

by 2015. During the initial three-year Intensive Phase, the program will assist up to 17 sub-Saharan countries⁵ to achieve the Abuja targets by 2008.⁶

While the Bank will contribute to achieving regional targets (RBM 2010 targets, and RBM 2015 targets and MDGs), the core target setting in the Booster Program will be grounded firmly in the Bank's country-specific dialogue, as part of the project preparation and supervision process. Each country, based on their RBM Strategic Plan and health sector strategy more broadly, would be assisted to set ambitious but achievable targets in accordance with country-specific baseline data, monitoring and evaluating capacity, and service delivery opportunities. The private sector is envisaged to play a key role in expanding and sustaining intervention coverage. Bank Task Teams will be expected to deliver projects that respond directly to gaps in country strategic plans. Achievement of the targets in the national plan will be a joint effort with all RBM Partners in the country. The Bank's contribution to target achievement should be concrete and measurable, but attribution is not required.

The Booster Program's first three-year phase will correspond to the three-year IDA 14 cycle and its success will be measured against contribution to meeting the targets set in Abuja during the African Heads of State Conference on Rolling Back Malaria in 2001. As the Booster Program will support national malaria control strategic plans, the Bank's role will be one of partner, along with other donors, who together with the Government will work to achieve the targets of the national plan. Key outcome indicators will include increased coverage of preventive technology and vector control (such as insecticide treated bednets (ITNs) and indoor-residual spraying (IRS) where appropriate, intermittent preventive treatment (IPT), and access to prompt and effective treatment.

Scaling-Up for Impact (SUFI): Unlike many other public health problems, malaria cannot be satisfactorily controlled with incremental methods because its vectors are too efficient. Indirect measures, including the long-tried approach of strengthening the general health system, without concurrent and aggressive malaria control, amounts to business as usual—yielding limited progress, to judge by the results in Africa over the last decade. Successful malaria control requires bold, decisive steps to obtain high coverage quickly. Accordingly, the Booster Program will work aggressively to support clients implementing effective interventions such as ITNs and effective treatment (including ACTs), facilitating sufficiently high coverage to ensure large scale impact. The Bank's efforts will fit within the broader framework of the RBM partnership and will build on the recent progress in Africa to increase coverage of essential interventions.

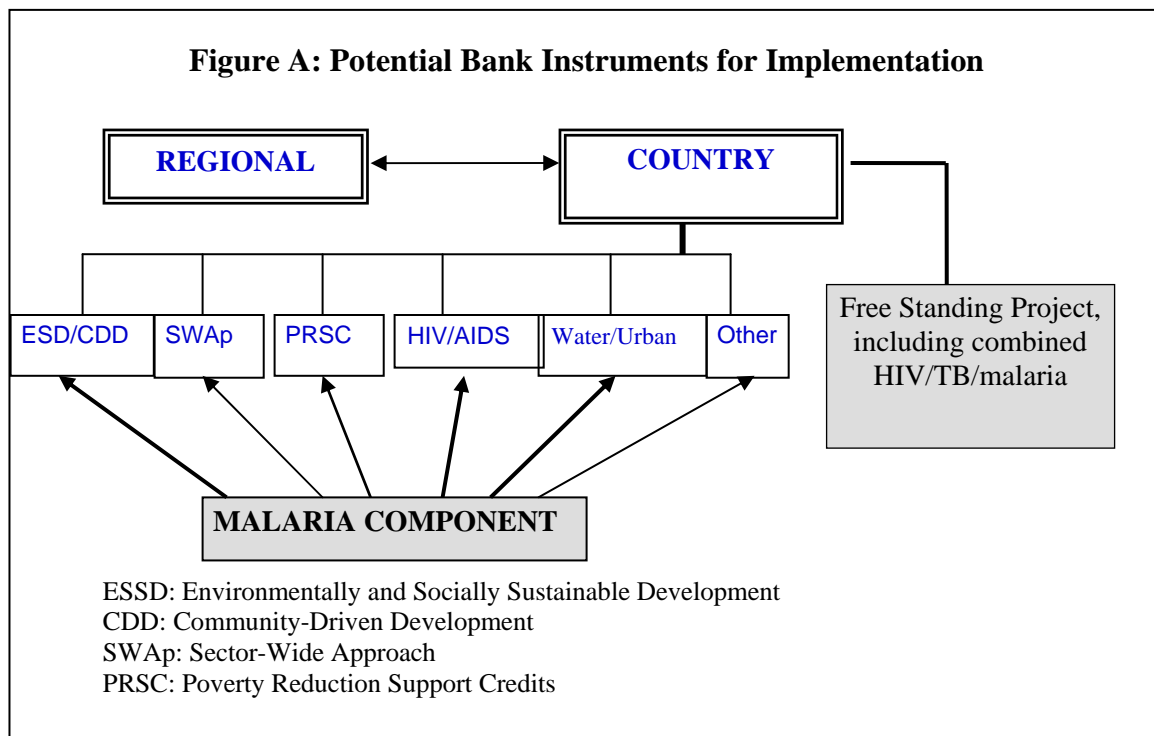
The Program: The Bank's approach will be proactive while promoting country leadership and ownership. In the initial three-year intensive phase the Booster program will commit

⁵ The 17 countries are Angola, Benin, Burkina Faso, the Democratic Republic of Congo, Ethiopia, Eritrea, Ghana, Kenya, Mali, Malawi, Nigeria, Rwanda, Senegal, Sudan, the United Republic of Tanzania, Uganda, and Zambia.

⁶ The Abuja targets were originally set for 2005, a schedule now widely regarded as very difficult to achieve in many countries. Broadly speaking, they call for at least 60% utilization of effective malaria prevention and treatment.

approximately US\$500 million in IDA allocations to support countries willing and ready to improve and expand their malaria control efforts. In addition, a smaller Regional Allocation is proposed to address issues that have cross-border externalities (operations research, resistance surveillance, anti-counterfeiting measures, et cetera), multi-country malaria control activities, and coordination and implementation bottlenecks across the region. At the end of the initial three years, it is expected that a stock-taking review will be conducted to formulate an expanded second phase program that will seek to consolidate the gains achieved and extend control to remaining endemic areas.

Design: Exact Booster Program activities and targets will depend on the needs and baseline coverage levels of individual countries. The health sector is not necessarily the only entry point for supporting malaria control efforts. Indeed, past experience shows that vertical, horizontal, and diagonal mechanisms have to be utilized if malaria is to be controlled. Figure A illustrates some of the Bank’s available instruments.



Key Features of the Booster Program

1. Implementation Flexibility

- No fixed prescription: approaches and targets will vary from country to country depending on the specific context (national strategic plans)
- Free choice from existing Bank instruments and/or free standing operation
- Reliance on existing instruments and institutions at country and regional levels

2. Regional Component

- To address cross-country and cross-border issues.

3. Results Based

- Bank's "Malaria focal point" will be accountable for all efforts in each country. Strong M&E support will be provided nationally and regionally

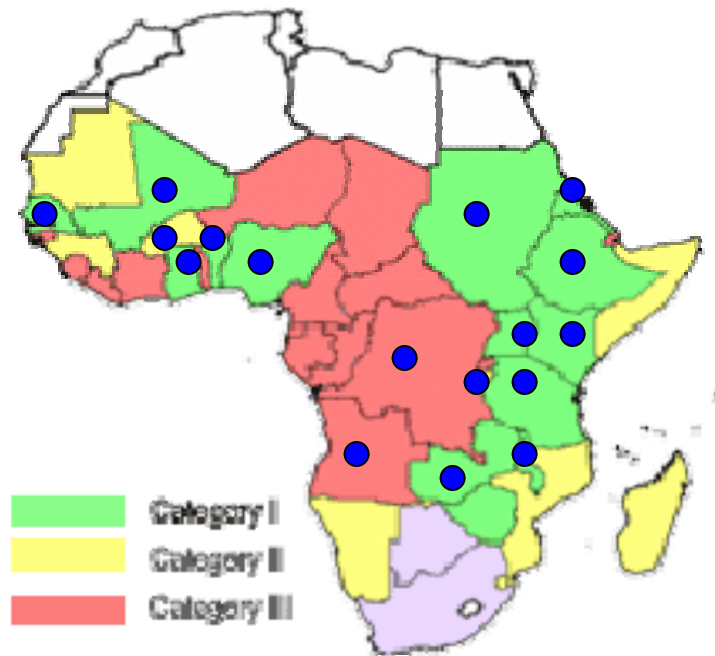
4. Complementarity

- The Booster Program will *complement* the efforts of RBM partners and the financing from the Global Fund and other donors.

Country Selection: Seventeen countries are proposed for inclusion in the Booster Program's first phase. Selections are based primarily on the readiness assessments made by the Roll Back Malaria (RBM) partnership in 2003, which divided countries into three categories. Most countries in the first category—those most ready to take action—are included in the Booster Program. The list is meant to be indicative and is not closed. The Bank will also exploit windows of opportunity when interest is expressed by other countries, which is why some in categories II and III are also included among the 17 countries where the Booster Program will begin. World Bank Country Directors and their country teams will take the initiative in developing malaria programs as an integral part of their country programs (see Figure B).

Figure B: Country Readiness for RBM Action (March 2003)

The 17 countries.⁷ selected for intervention are shown as blue dots in the map



Category 1: High burden, high readiness, GFATM funds

Benin, Ethiopia, Eritrea, Ghana, Malawi, Kenya, Mali, Nigeria, Senegal, Sudan, the United Republic of Tanzania, Uganda, Zimbabwe, Zambia

Category 2: High burden, limited readiness, GFATM funds

Burkina Faso, Burundi, Comoros, Guinea Conakry, Madagascar, Mauritania, Mozambique, Namibia, Somalia, Swaziland.

Category 3: Low readiness & Complex Emergency countries

Angola, Cameroon, the Central African Republic, Chad, the Republic of Congo, Côte d'Ivoire, Djibouti, Equatorial Guinea, Gabon, the Gambia, Guinea Bissau, Liberia, Niger, Rwanda, Democratic Republic of Congo, Sao Tome and Principe, Sierra Leone, Togo.

⁷ These categories were made in 2003. It is likely that meantime some of the countries may have moved from one category to another.

Country-based approach: The Booster Program does not prescribe the instrument or sectors to be used to improve malaria control. While the health sector will play an important role, it is important for the Booster Program to work across sectors as well where appropriate. Decisions will be made by country directors and country teams on a country-by-country basis. It is important to emphasize that programs will not be implemented according to a “one size fits all” model. Rather, each country will tailor its booster strategy and decide which options are most suitable for rapid impact in line with its strategic plan. Some options are illustrated in the proposed framework diagram (see Figure C).

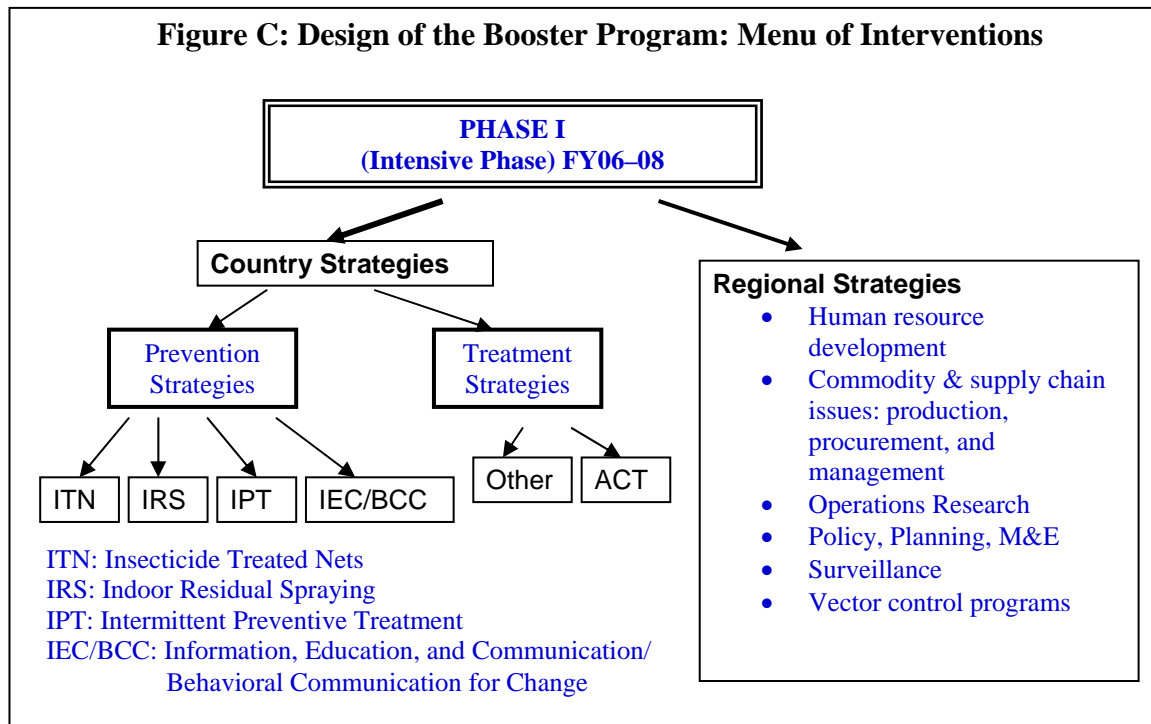
Regional approach: To significantly increase anti-malaria intervention coverage across 17 countries in sub-Saharan Africa over three years, the Bank will need to maximize gains from economies of scale, regional public goods, and cross-border externalities. While the central focus of the Booster Program is undoubtedly at the country level, there is a need to finance a regional support framework that would augment and leverage the individual national efforts. Such a system would be appropriate where a multi-country approach is indicated for technical reasons, including operation research, cross border vector control, monitoring and evaluation, and other regional activities as needed.

Partnership and collaboration: It is important to consider explicitly the requirements for effective malaria control within the country, as articulated by the Government, with *joint* support from the Roll Back Malaria Secretariat, WHO, the Bank, private sector/NGO and other donors. The Bank will continue to collaborate with the Global Fund and other partners as it is already doing in Benin, Democratic Republic of Congo, Zambia, and other countries. The Bank will also seek out synergistic relationships with new initiatives such as the recently announced US Presidential Initiative on Malaria.

IDA funding and “additionality”: IDA financing will be proactive and complement both local and external resources, including the Global Fund⁸, to ensure sufficient resources and support—both for technical and implementation issues—for effective malaria control. Given the increased attention many donors are now paying to malaria (for instance, the recently announced US Presidential Initiative), it is essential to maintain “additionality” of resources. That is, all partners will have to pursue complementary strategies if countries are to surpass the required coverage thresholds.

⁸ The GFATM “only finances programs when it is assured that its assistance does not replace or reduce other sources of funding, either those for the fight against AIDS, tuberculosis and malaria or those that support public health more broadly. The GFATM actively seeks to complement the finances of other donors and to use its own grants to catalyze additional investments by donors and by recipients themselves.”

Figure C: Design of the Booster Program: Menu of Interventions



If the intensive phase is successful in obtaining high coverage with essential interventions, the recurrent costs required to control malaria should decrease as the disease is brought under control. To achieve this high coverage, though, governments together with multiple donors must commit to scaling-up for impact.

Challenges and Bottlenecks

Human resources and capacity development: The shortage of human capacity is one of the key obstacles to successful malaria control. The Booster Program will finance significant in-country and regional training in various subjects—planning, management, implementation, monitoring, coordinating—and will provide technical assistance to improve the organization and management of country programs.

Communications and behavioral changes: Extending coverage with new drugs and ITNs will require significant behavioral changes in endemic-zone populations to improve utilization, not just coverage. Communication campaigns and community engagement will be critical to the success of these efforts.

Strengthening health systems: Malaria control requires a combination of approaches and related delivery mechanisms. Some rely heavily on health systems capacity, such as providing prompt and effective treatment. Others are less reliant. For instance, mass distribution of ITN through an immunization campaign can be carried out even with severe health system constraints.

Health system constraints *alone* justify neither inaction nor a continuation of the inadequate commitment to malaria control. There is evidence that, in disease control and public health,

major interventions have worked on a large scale even in difficult settings with extreme poverty and weak health systems (Levine et al., 2004).

The Booster Program will address systems issues (such as human resources) while concurrently exploiting immediate opportunities for high coverage. Emphasizing a malaria control program alone without concurrently investment in the health system would jeopardize long-term sustainability.

Commodity and supply chain management: The Booster Program's success will require careful supply chain management because commodities—utilization of ITNs and ACTs above all—lie at the heart of its strategy. In both the short-term and the long-term, managing the supply chain will be crucial to increase and maintain coverage with ITNs and anti-malarial drugs, as well as to prevent epidemics.

Financial: A lack of funds remains an urgent and key constraint, but is by no means the only one. Additional financing is likely to make a difference only when it is combined with a host of other components, such as sound policies, good governance, effective implementation arrangements, technical rigor, and the full utilization of existing human resources coupled with strategic efforts to build more.

Global Subsidy for Artemisinin-based Combination Therapies (ACTs): The widespread resistance by *Plasmodium falciparum* to the traditional first line antimalarial drugs—chloroquine and sulphadoxine-pyrimethamine—has made widespread effective treatment exponentially difficult. Among the first line options, only ACTs are appropriate for widespread use in most African countries. The challenge thus becomes to promote widespread ACT use while also safeguarding its effectiveness for as long as possible. To achieve this goal, a sustained high-level global subsidy of ACTs may be required as recommended by the Institute of Medicine (IOM). The World Bank has recently endorsed the economic rationale behind the global subsidy on the grounds of social welfare transfer and promotion of a public good. The subsidy would help to meet both sides of the challenge. Reduced cost would facilitate wider access to the drug and at the same time help to limit resistance by ensuring a more constant supply. However, the feasibility of and architectural options for such a subsidy is unknown. A feasibility assessment is a logical next step prior to moving into the implementation phase.

Moving from Strategy to Action: As stated at the launch of the Global Strategy and Booster Program, additional co-financing (from public and private sector partners) will be critical to success. While additional resources are sought, the Bank has stepped forward with an initial commitment of US\$ 500 million, to be allocated roughly as shown in Table 1. The Booster Program has already moved ahead with project preparation in Benin (US\$25 million), the Democratic Republic of Congo (US\$30 million), and in Zambia (US\$20 million).

Management of the Booster Program within the Bank: The Bank is building a Malaria Implementation Resource Team (MIRT) to take on three primary tasks. First the MIRT will assist country directors and TTLs in the complex tasks of developing booster programs that

complement other donors' contributions. Second, the team will ensure that proper coordination exists between different Bank instruments in the same country. Third, the MIRT will oversee the overall implementation and monitoring of the program (for instance, ensuring alignment with existing country RBM strategies), and will liaise with the Bank's senior management and external partners. A regional multi-sectoral group will also be constituted in the Africa Region to assist the MIRT in coordinating potentially synergistic efforts between the different sectors likely to be involved.

PART I: GOALS AND TARGETS OF THE BOOSTER PROGRAM FOR MALARIA CONTROL IN AFRICA

1.0 INTRODUCTION

The present paper translates the Bank’s recently published Global Strategy and Booster Program into an outcomes-driven assault on malaria in Africa. As detailed in this document, the Booster Program is designed to augment and reinvigorate existing programs, and does not constitute an independent initiative. This effort will build on a revitalized Roll Back Malaria Global Partnership (RBM) and complement the efforts of other partners both at national and regional levels to bring malaria under control.

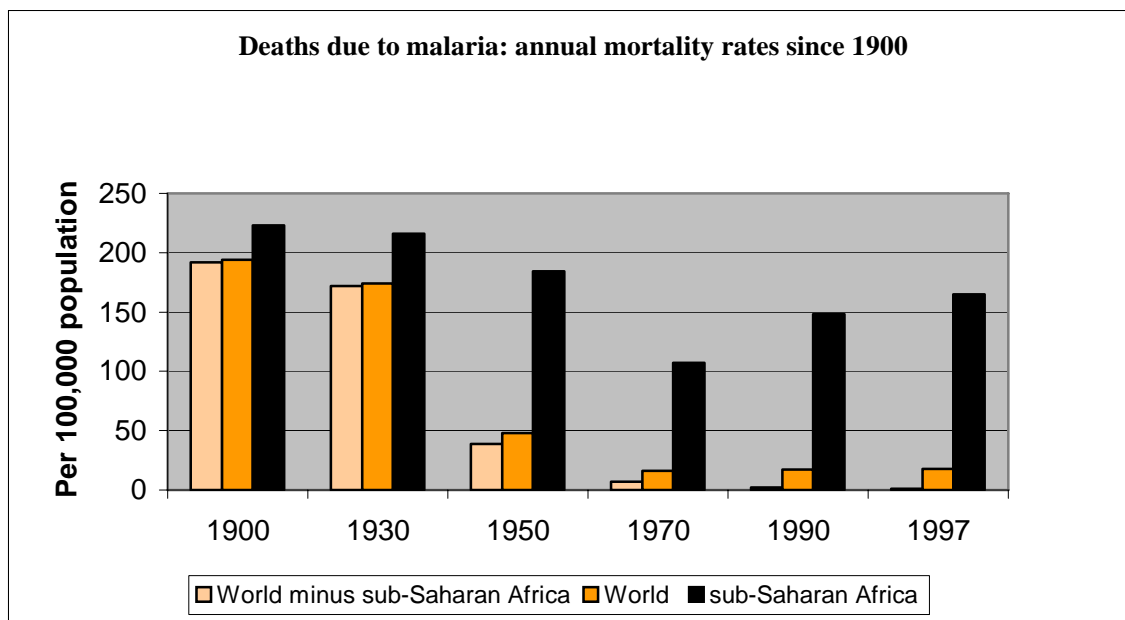
Every year, malaria kills over 1.1 million people—most of them children under five years old.^{9,10} More than 80% of these deaths occur in sub-Saharan Africa. The Commission for Africa notes that: “malaria is the biggest killer of African children, and half those deaths could be avoided if their parents had access to diagnosis and drugs that cost not much more than US\$1 a dose.”¹¹ Pregnant women and their unborn children are particularly vulnerable to this disease and it is a major cause of perinatal mortality, low birth weight, and anemia.

⁹ Roll Back Malaria. WHO and UNICEF, 2005. The World Malaria Report. Geneva, WHO, 2005.

¹⁰ Malaria is a potentially deadly disease caused by infection with the *Plasmodium* parasite. *Plasmodium* is transmitted to humans through the bite of infected *Anopheles* mosquitoes. Four species of malaria parasites can infect humans: *Plasmodium falciparum*, the deadliest and most common form in sub-Saharan Africa, *P. vivax*, *P. malariae*, and *P. ovale*. Climatic conditions in the sub-Sahara are unfortunately favorable for highly efficient vectors such as *A. gambiae* and *A. funestus*. For further details see: www.who.int

¹¹ Sylvia Meek. 2005. *Tackle Malaria Today Give Tomorrow a Chance*. House of Commons. All-Parliamentary Group.

Figure 1: Profile in Contrasts: The Persistent Burden of Malaria in Africa



Source: WHO (1999).

The Booster Program aims to amplify RBM's impact in the world's worst-hit region. For most African countries, malaria control is inextricably linked with the Millennium Development Goals (MDGs), which the Bank has adopted as a corporate priority (Box 1).

Box 1: Malaria and selected MDGs

Goal 2: Achieving universal primary education

- Malaria is a leading source of illnesses and absenteeism in school-age children and their teachers. It adversely affects education by impeding school enrollment, attendance, cognition, and learning.

Goal 4: Reducing child mortality

- Malaria is a leading cause of child mortality in Africa.

Goal 5: Improving maternal health

- Malaria causes anemia in pregnant women and causes low birth weight.

Goal 6: Combating HIV/AIDS, malaria, and other diseases

- Malaria morbidity and mortality in Africa is horrific and worsening.

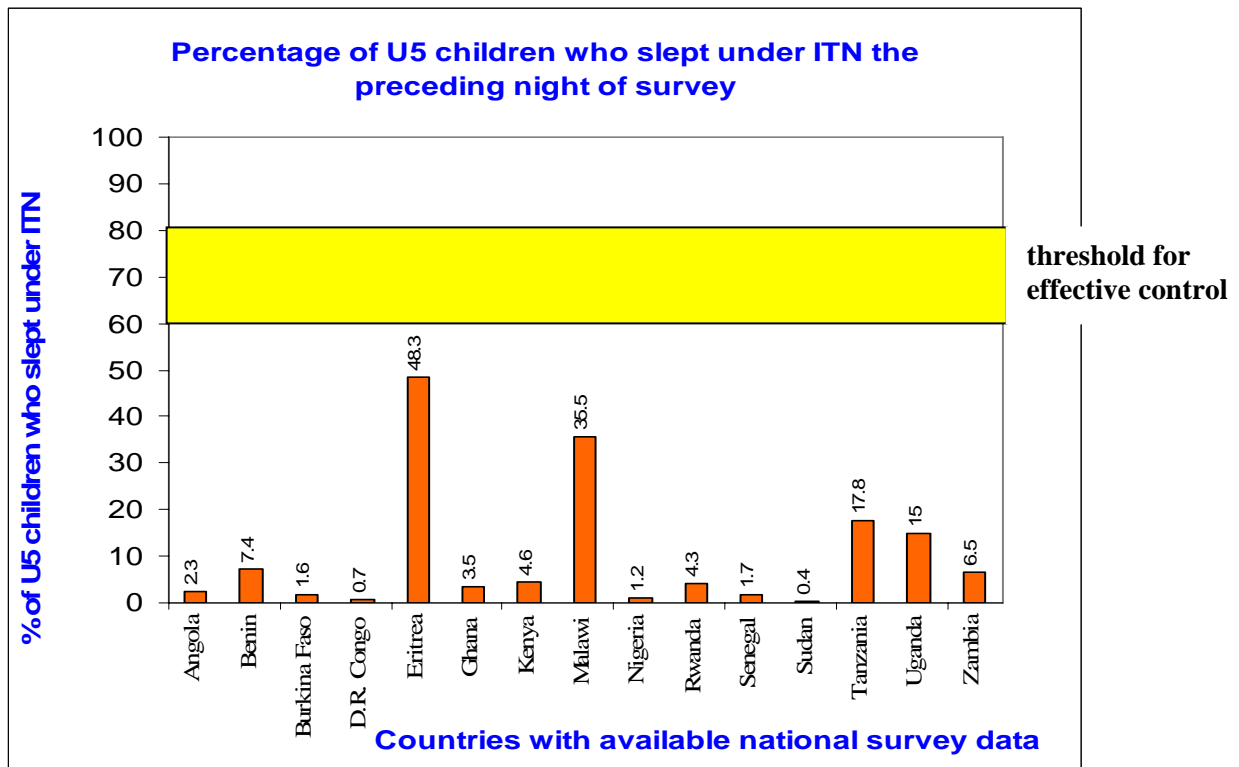
Goal 8: Developing a global partnerships, including ones to provide essential drugs

- There is a lack of access to affordable essential drugs for malaria

2.0 SCALING-UP MALARIA CONTROL PROGRAMS FOR IMPACT (SUFI)

There is an urgent need to increase coverage with effective interventions. Unlike many other public health problems, malaria cannot be satisfactorily controlled with incremental methods because its vectors are too efficient. Indirect measures, including the long-tried approach of strengthening the general health system without concurrent and aggressive malaria control amounts to business as usual—yielding limited progress. Successful malaria control requires bold, decisive steps to obtain high coverage quickly.

Figure 2: Importance of Reaching Critical Threshold for ITN Use¹²



Source: WHO/UNICEF. *The World Malaria Report, 2005*. Tanzania DHS 2004, Uganda DHS 2004–05 (preliminary results), Eritrea MOH 2004 survey

The Booster Program is planned to last ten years, including an intensive phase spanning the Bank’s fiscal years 2006–2008, meaning July 1, 2005 through June 30, 2008. The decade-long timeline reflects the difficulty of fighting this entrenched, deadly disease in Africa. It is important to stress that long-term financial and institutional commitments from governments and partners alike will be required to reduce sustainably malaria prevalence.

3.0 GOALS AND TARGETS OF THE BOOSTER PROGRAM

While the Bank will contribute to the achievement of achieving regional targets (“intensive phase”, 2010, and 2015), the core target setting in the Booster Program will be grounded firmly in the Bank’s country-specific dialogue, as part of the project preparation and

¹² Based on available information at the time of preparation of this report.

supervision process. Each country, based on their RBM Strategic Plan and health sector strategy more broadly, is expected to set ambitious but achievable targets in accordance with country-specific baseline data, monitoring and evaluating capacity, and service delivery opportunities. Bank Task Team Leaders will be expected to deliver projects that respond directly to gaps in country strategic plans. Achievement of the targets in the national plan will be a joint effort with all RBM Partners in the country. The Bank's contribution to target achievement should be concrete and measurable, but attribution is not required.

A Ten Year Plan:

The Booster Program will contribute towards the goals and targets set by client governments and partners in the Global Roll Back Malaria Partnership of halving malaria-associated mortality by 2010 and further halving it by 2015.

Roll Back Malaria Partnership Targets to achieve by 2010:

- Protect 80% of people at risk from malaria using locally appropriate vector control methods such as insecticide-treated nets (ITNs), indoor residual spraying (IRS), and environmental management.
- Diagnose and treat 80% of malaria patients with effective medicines (e.g. Artemisinin-based combination therapies) within one day of the onset of symptoms.
- In areas where malaria transmission is stable, provide intermittent preventive treatment (IPT) to 80% of pregnant women.
- Reduce the malaria burden by 50% compared to 2000.

Roll Back Malaria Partnership Targets to achieve by 2015:

- Reduce national malaria morbidity and mortality by 75% compared to 2005, with special emphasis on reductions among the poorest groups.
- Achieve the malaria-related MDGs by national aggregate measures and among the poorest groups.
- Attain universal and equitable coverage with effective interventions.

Intensive Phase (FY06–FY08 - - July 1, 2005 to June 30, 2008):

Over the intensive phase, the Bank will seek to contribute to a rapid and aggressive expansion of malaria control intervention coverage. As the Booster Program will support national malaria control strategic plans, the Bank's role will be one of partner, along with other donors, who together with the Government will work to achieve the targets of the national plan to Roll Back Malaria. Achievement of country-set targets will be a joint effort with the country and other donor partners. The Booster Program will contribute to joint efforts of partners in the 17 selected countries to catch-up to and reach the coverage targets established in Abuja (that were to be achieved by 2005) by July 1, 2008 :

- At least 60% of those at risk of malaria, particularly pregnant women and children under 5 years of age, should benefit from suitable personal and community protective measures such as ITNs.
- At least 60% of those suffering from malaria should get affordable and appropriate treatment within 24 hours of the onset of symptoms.

- At least 60% of all at-risk pregnant women should receive IPT, especially those in their first pregnancy.

4.0 RESULTS FRAMEWORK FOR THE BOOSTER PROGRAM IN THE AFRICA REGION

The Booster Program will place a heavy emphasis on results. The Booster Program’s first three-year phase will correspond to the IDA 14 cycle and its success will be measured at the country level against country-specific targets. The targets set in Abuja during the African Heads of State Conference on Rolling Back Malaria will serve as a guide to county-specific targets.

Table 1: How far can the Booster Program go in the three-year Intensive Phase?

LEVEL	AREA	AVAILABLE INFO (indicators to be tracked)
Inputs	Policies and Strategies Commitments and Disbursements	Policy, guidelines, and strategies for national malaria control
Processes	Malaria-related commodities	ITN/insecticide/ACT procurement
Outputs	Services delivered	<ul style="list-style-type: none"> • Insecticides used • ITNs distributed/sold • Nets re-treated • Drugs distributed/sold • Drug/insecticide efficacy
Outcomes	Target populations benefiting from interventions/behavior change	<ul style="list-style-type: none"> • Household ITN possession • IPT coverage of pregnant women • Coverage of antimalarials for fevers in children <5 • Malaria epidemics detected and controlled • IRS coverage of households
Impact	Morbidity, Mortality	<ul style="list-style-type: none"> • Malaria case and death reports from facilities • Proportional outpatient visits, hospital admissions/deaths • Childhood anemia prevalence • All-cause <5 mortality

The Africa Region will focus on outcomes during the Intensive Phase of the program, but it is unrealistic to assume that progress will be evident immediately in all areas. Nonetheless, given the scientific evidence, the Booster Program can reasonably expect that substantial implementation progress will be rewarded with sound public health outcomes, even if measuring impact is difficult or delayed. For instance, even if 60% ITN utilization is achieved by June 30, 2008 measurement of the child-mortality impact of that coverage will

take 1-2 years to complete. An extensive evaluation will be undertaken at the end of the first three years (again, mainly focusing on coverage and utilization of effective interventions) and again after seven more years. The monitoring and evaluation framework takes into account the scope and complexity of the program.

Although the inputs and processes are very important, the Bank will be neither prescriptive nor dogmatic in its support to the participating countries. The Bank also expects to play a pro-active, critical role in carefully evaluating important decisions taken by its own staff and country counterparts. This thoughtful, professional dialogue will help assure that all approaches remain rigorous even as they may differ to meet the needs of different countries.

The Bank's own role will be monitored along three main lines by the Bank's Africa Region:

- (i) **Support to Countries:** improve the quality and intensity of the Bank's lending and non-lending assistance to client countries.
- (ii) **Support to Regional Partnerships:** improve the quality and intensity of the Bank's contribution to regional partnerships, in line with its comparative advantage.
- (iii) **Internal Capacity:** Strengthen the Bank's internal capacity to rise to the challenges of (i) and (ii).

5.0 BACKGROUND

5.1 Global Overview of Malaria

It is estimated that about 350–500 million clinical cases of malaria occur annually. Malaria is a disease so deadly that it can kill humans within hours and so prevalent that in some parts of the world there is barely a child who does not suffer from malaria by his or her first birthday.

Worldwide, three thousand children—most of them living in Africa, south of the Sahara—die every single day. An estimated 10,000 pregnant women and up to 200,000 infants die each year as a result of malaria.¹³ Pregnant women living in malaria-prevalent areas are four times more likely to contract malaria and twice as likely to die from the disease compared to adults living elsewhere. Once infected, pregnant women risk anemia for themselves and low birth weight and for their fetuses. Malaria is a curable and a preventable disease but people die because simple prevention and treatment commodities remain tragically and inexcusably scarce.

5.2 The Situation in Africa

Malaria threatens the lives and livelihoods of overwhelming numbers of Africans and exerts a public health burden so large that it is considered a principal obstacle to development across the continent. The 2005 World Malaria Report notes that Africans bear about 60% of the 350–500 million annual clinical malaria episodes. Of the more than one million deaths,

¹³ Roll Back Malaria Department. WHO. 2005. Malaria: A Human Burden. Focus on Pregnant Women, p.8.

over 80% occur in sub-Saharan Africa, accounting for one in five of all childhood deaths in the region.¹⁴

6.0 MALARIA BURDEN

Malaria impairs human development and economic growth in sub-Saharan Africa. It is estimated that people in heavily endemic areas spend approximately one quarter of their incomes on medical visits, mosquito nets, medicines, laboratory tests, and funerals for relatives. Thus, at-risk populations are less productive and suffer significant income losses because of work absences or the inability to plant and harvest crops when sick. The disease also affects the long-term productivity of children since they lose educational opportunities.

6.1 Human Burden

The UK Commission for Africa notes that: “malaria is the biggest single killer of African children, and half those deaths could be avoided if their parents had access to diagnosis and drugs that cost not much more than US\$ 1 a dose¹⁵”. Pregnant women and their unborn children are particularly vulnerable to malaria and it is a major cause of perinatal mortality, low birth weight, and anemia.

6.2 Economic Burden

The World Bank estimates that malaria alone slows African economies by 1.3% per year—about a third reduction in African GDP over 35 years. It concludes that it costs African economies US\$ 12 billion annually. Yet despite malaria’s devastating toll, funding for malaria control by international donors has typically amounted to just US\$100–200 million annually.

The figures are even more startling in comparison. Annual economic growth between 1965 and 1990 averaged only 0.4% in malarious countries, less than one-fifth of the figure for malaria-free nations, which grew an average of 2.3% per year over the same period (Sachs and Malaney, 2002). These analyses do not constitute proof that malaria causes low incomes and poor aggregate growth, but the disease must be considered a likely contributor (Arrow, Panosian, and Gelband, 2004). Estimates of the “total” (direct plus indirect) income losses due to malaria vary from 7% of household income in Malawi (Ettling et al., 1994), to 9%–18% of annual income for small farmers in Kenya, to 7%–13% of annual income lost in Nigeria (Leighton and Foster, 1993). One multicountry study attempted an Africa-wide estimate, extrapolating from Burkina Faso, Chad, the Democratic Republic of the Congo, and Rwanda. The malaria toll equaled 0.6% of total sub-Saharan Africa GDP (Shephard et al., 1991).

¹⁴ Roll Back Malaria. RBM, WHO, UNICEF, UNDP, World Bank. 2001–2010 United Nations Decade to Roll Back Malaria. Malaria in Africa.

¹⁵ Sylvia Meek et. al. 2005. Tackle Malaria Today Give Tomorrow a Chance. UK House of Commons All Parliamentary Group on Malaria.

6.2.1 Malaria Control Gives Good Value for Money

Much of the available evidence indicates that malaria control makes good economic sense. For example:

- In Vietnam the government treats a case of malaria for US\$11 (1998 figures), including a clinic visit and the necessary drugs. The direct costs saved were about US\$9.5 million, double the amount spent on malaria control each year. To this is added about US\$14 million in reduced out-of-pocket household health care costs (Laxminarayan, 2004).
- In Brazil, nearly 2,000,000 cases of malaria and 231,000 deaths were prevented, compared to what would have happened in the absence of a malaria control program. The overall cost effectiveness was US\$2,672 per life saved, or US\$69 per disability-adjusted life year (DALY) averted,¹⁶ which compares highly favorably to many other disease control interventions (Akhavan et al., 1999). Other sources indicate that insecticide treatment of existing mosquito nets costs US\$4–US\$10 per DALY saved, providing nets and retreatment costs US\$19–US\$85 per DALY saved, and intermittent presumptive treatment of pregnant women through existing prenatal services costs US\$4–US\$29 per DALY saved (Goodman, Coleman, and Mills, 1999).
- It is estimated that governments in sub-Saharan Africa spend up to 20% of their health budgets on medical care for malaria victims and malaria control.¹⁷ Estimates suggest that malaria accounts for up to 40% of all public expenditures on health and 20%–50% of hospital admissions in many settings (WHO and UNICEF, 2003).

7.0 A CONTROLLABLE PROBLEM...GETTING WORSE?

Malaria is preventable and easy to cure with available technologies. The RBM Partnership and WHO support an evidence-based consensus on a combination of preventive and curative measures that include: insecticide-treated bed nets (ITNs) and curtains, indoor residual (house) spraying where the pattern of transmission indicates, intermittent preventive treatment in pregnancy, and prompt treatment with effective drugs (WHO, 2003; RBM and WHO, 2004; RBM, 2004). However, in the absence of strong and sustained malaria control efforts, coverage with effective interventions is low, particularly among the poor in the most highly affected countries.

¹⁶ A common measure of disease burden is the Disability-Adjusted Life Year (DALY), which includes both death and disability. The DALY is an indicator of the time lived with a disability and the time lost from premature death. Years of life lost from premature mortality are estimated with respect to a standard expectation of life at each age. Years lived with a disability are translated into an equivalent time loss through multiplication by a set of weights that WHO defines based on the severity of each disability. As such, the DALY combines the impact of disease on mortality and morbidity.

¹⁷ Sylvia Meek. 2005. Tackle Malaria Today Give tomorrow a chance. UK House of Commons. All-Parliamentary Group on Malaria. See pg. 12.

Box 2: History of Malaria Control/Eradication

In 1954 the Pan-American Sanitary Conference adopted a continental plan to eradicate malaria from the Americas. In 1955 this plan was extended to the world by the World Health Assembly. In 1956, the Sixth Expert Committee formulated a strategy for eradicating malaria (WHO, 1957). The goal of malaria eradication was understood by the committee as a problem of economic and political development, as much as of public health (Packard, 1998). Malaria was eliminated in Europe, North America, and parts of other continents through deliberate programs of mosquito control and clinical treatment, as well as through generally improved social and living conditions. The commitment and persistence behind *eradication*¹⁸ efforts elsewhere were never applied in Africa's highly endemic areas (Breman, Egan, and Keutsch, 2001). Taking into account lessons learned during the eradication campaigns, in 1969 the World Health Assembly reaffirmed that eradication was the ultimate goal but stated that, in regions where eradication was not yet feasible, *control*¹⁹ of malaria should be encouraged and may be a necessary and valid step toward the ultimate goal of eradication. (WHO, 1969). In the Africa Region, given the disease transmission patterns, the primary goal of the RBM Partnership is control, not eradication.

7.1 There is a wide gap between knowing and doing

Insecticide-treated nets sharply reduce malaria-related child mortality. In 2000, African Heads of State, other country representatives and representatives of development organizations, including the World Bank, met in Abuja, Nigeria, to establish targets for implementing the technical strategies to Roll Back Malaria. Reaching the Abuja target of over 60% utilization with preventive and curative interventions is anticipated to provide up to 20% reduction in mortality from all causes among children under five years of age, a 50% reduction in clinical malaria episodes, and widespread protection of even nonusers as the parasite reservoir shrinks and transmission slows.

Despite much effort and some successes in a few countries, progress in malaria control is well below the 60% utilization target agreed upon in Abuja. Although this coverage was initially planned for 2005, the goal is not likely to be achieved by that time in many countries. This is particularly true in Africa, where malaria control efforts remain patchy in most of the severely affected countries. In many of them, there are indications of a real or potential increase in malaria, partly due to growing drug resistance. In Ghana, for example, "malaria continues to be a leading cause of morbidity and mortality. There are high levels of chloroquine resistance in the country, resulting in a change in drug policy to more expensive drugs. Coupled with the low coverage of ITNs, a major issue will be the need to subsidize both the cost of ITNs and the drugs to make them more affordable to government and to the people" (Ghana Ministry of Health and Health Partners, 2004).

¹⁸ Eradication is the reduction of new cases of the disease to zero.

¹⁹ Control is the reduction of the cases of the disease to an acceptable level, as determined by the area in question (Hotez et al., 2004).

According to the report of the External Evaluation of Roll Back Malaria (Malaria Consortium, 2002): “Due to inadequacies in the systems available for M&E, it is not possible to know with any certainty how the malaria burden has changed during the first three years of RBM. However, anecdotal evidence and the strong consensus among experts suggest that, at the very least, the malaria burden has not decreased. What is more likely, and believed to be the case by those involved, is that malaria has got somewhat worse during this period.” Although current coverage data are very limited, the most recent official WHO data indicate that in many countries coverage with key interventions is well below agreed targets of 60% utilization by 2005 (World Health Organization, 2005), and the poor have much less access to effective interventions than others (table 2 and figure 3). Nonetheless, some individual districts coverage has increased dramatically, indicating what can be achieved in a relatively short period.

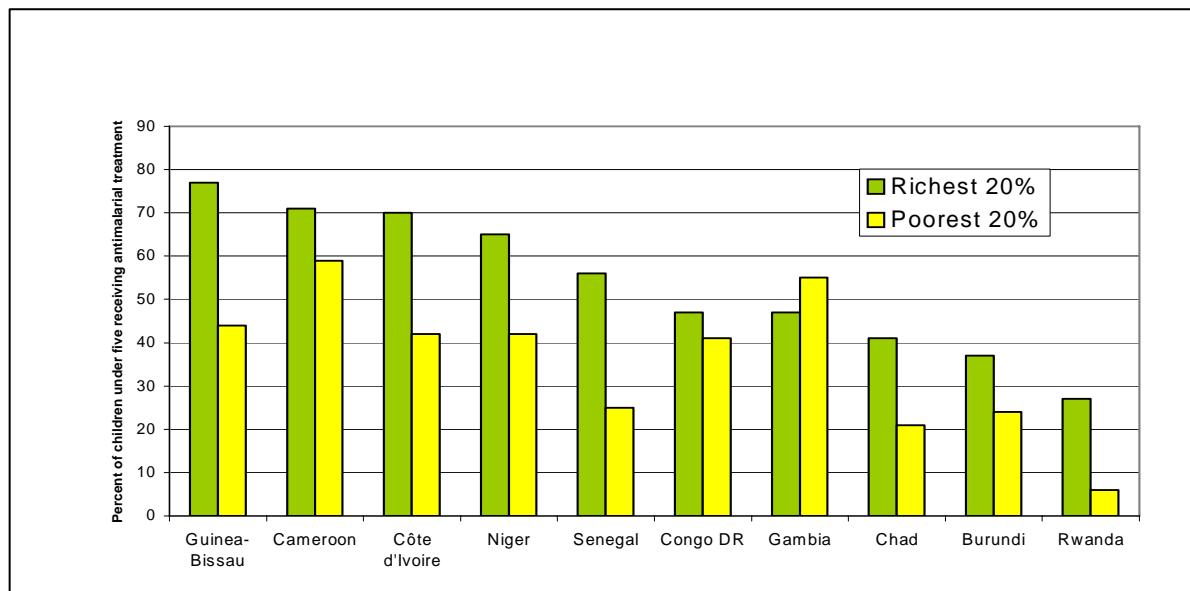
Table 2: Ownership of Insecticide Treated Bednets by Income Group in Malawi

<i>Bednet ownership</i>	<i>Bottom 28%</i>	<i>Top 35%</i>
% of households with at least one bednet	5.1	25.6
% of household with at least one bednet treated with insecticide	0.9	5.4

Source: Gwatkin 2004.

Treatment, *when prompt and effective*, is associated with improved outcomes, even in very poor settings. For example, teaching mothers to provide prompt chloroquine treatment for fevers at home resulted in a 40% reduction in under-five mortality in Tigray, Ethiopia (Kidane and Morrow, 2000). However, the poor also have less access to *any* treatment, as shown in Figures 2 and 3, let alone an *effective* treatment.

Figure 3: Access to Anti-Malarial Treatment



Source: Worrall, Basu, and Hanson, 2003.

8.0 THE BANK'S PERFORMANCE TO DATE ON MALARIA IN ASIA, LATIN AMERICA, AND AFRICA

The Bank's work in Malaria has been limited. It started in the mid 1970s, with the inclusion of specific components to address malaria and schistosomiasis in agricultural and water resource development projects. Although schistosomiasis control became a major focus of the Bank's work, malaria activities remained far more modest.

8.1 Major Programs

8.1.1. Asia

In Indonesia the first provincial health development project (1983, US\$9 million), covering three provinces of the Island of Sulawesi, included support to the provincial malaria control programs. It largely achieved its objectives.

In the early 1990s the Government of Vietnam faced a major resurgence of the disease and requested support from the Bank. The National Health Support Project (1996), contained a sizeable malaria component (US\$25 million) to support the national malaria control program, then focusing most of its activities on 15 high-burden provinces. The project supported targeted use of IRS and distributed more than one million ITNs. Most importantly it supported the change in national drug policy to first Artemisinin mono-therapy, and later to ACTs. During project preparation and implementation, the Bank worked very closely with the WHO Regional Office for the Pacific (WPRO). In addition to the Bank, AUSAid, the Government of the Netherlands, and the EU provided substantial support to the control program. The number of malaria cases fell to about 37,416 annually. Malaria components in neighboring Laos and Cambodia, however, showed less impressive results.

The largest malaria control project ever financed by the Bank has been the Government of India's Enhanced Malaria Control Project (EMCP, 1997, US\$164 million). The project supported the government in transitioning from an earlier eradication strategy based solely on IRS towards a more current control strategy. While project implementation was slow at first, reported cases of malaria have now declined by 93.3%, 80.8% and 40.6% for the states of Maharashtra, Gujarat and Rajasthan, respectively, from 1997 to 2002.²⁰

8.1.2. Latin America

With the Bank's policy decision to lend for free-standing health projects in 1980, the components in previous projects disappeared almost overnight. Yet the Bank's first health project was initiated as a component of an agricultural and settlement project (the North-West Region Development Program (1981, US\$8 million)) in Brazil's Amazonian state of Rondonia, which had experienced massive immigration at the time. The project was designed to improve access to basic health care, to reinforce malaria control, and support tropical disease research in the Amazon. Although the state quickly succeeded in expanding

²⁰ Status of Enhanced Malaria Control Project (2003-04). Obtained by the World Bank from the Directorate of National Anti Malaria Program in December 2003.

the basic health services under the project, the malaria situation continued to present serious problems. The government of Brazil, supported by the Bank and the Pan American Health Organization (PAHO), subsequently undertook a major review of the scientific and organizational issues affecting malaria control in the Amazon. The key findings were that “frontier malaria” was a moving target, located mainly around several distinct epidemiological patterns (gold mining sites, new settlements, and the periphery of rapidly expanding urban centers). It also confirmed that the implementing agency was overly centralized and that decentralization to the states and municipalities was required. A subsequent basin-wide project, the Amazon Basin Malaria Control Project (1989, US\$99 million) tried to address these issues and focused on malaria alone. The project achieved its objective of reducing malaria as a major public health threat. A similar malaria component, part of the Venezuela Endemic Disease Control Project (1992), also achieved its objectives.

8.1.3 Africa

The Bank’s malaria control activities in Africa are harder to assess. Two major projects have been in response to epidemics. In 1988, following a severe malaria epidemic in the Highlands of Madagascar, the Bank worked closely with WHO and provided emergency funding for the purchase of DDT for IRS and anti-malarials. The Health Sector Improvement Project of 1991 continued funding and provided additional resources to establish a malaria surveillance system.

More recently, in response to a severe epidemic in Eritrea in 2000, the Bank provided support through a US\$40 million Modified Multisectoral HIV/AIDS project (HAMSET). The malaria component substantially benefited from the technical support of a USAID-financed parallel project. It established a current decentralized control strategy and provided funding to the zone levels. The project is considered a success with a decline in morbidity of 60% (2003).

The implementation of a small malaria component in the Senegal Endemic disease Control Project (1997) was extensively delayed by institutional problems within the MOH and was ultimately found unsatisfactory.

Over the past five years malaria-specific funding has been absorbed largely into more general support to the health sector—recently through PRSCs. Since no mechanism currently exists within the Bank to track malaria-specific funding, it is not possible to either discern the level of funding, nor its eventual impact. The Booster Program will correct these weaknesses.

Box 3: ERITREA—A Success story

Results: In 2002, 58% of households owned one or more ITNs. Eritrea is the only country in sub-Saharan Africa that is on course to exceed the Abuja Target of 60% coverage of children under-five and other vulnerable groups sleeping under ITNs. Over the past 5 years, morbidity has dropped by 63% (in 1999 there were 179,500 cases, in 2003 there were 55,540 cases).

Government Leadership

- Strong leadership from the Minister of Health
- Excellent coordination by the National Malaria Control Program and Project (NMCP) Coordination Team

Pragmatic Strategies Aimed at Impact

- Sliding scale for net distribution, including free distribution. Free re-treatment of nets is also implemented.
- Access to effective treatment
The current antimalarial drug policy is CQ + SP for first-line treatment and Quinine for second-line treatment and severe cases. First-line treatment is provided by health facilities as well as Community Health Agents (CHAs).

Supportive Measures

- *Monitoring and evaluation*
Monitoring of program implementation is excellent. The NMCP produces realistic and well-defined annual plans, holds monthly team meetings, conducts quarterly supervision visits to the zones and carries out an annual review and report. Management Information System (HMIS) data are used to monitor changes in morbidity and mortality.
- *Communication*
Malaria-related communication is supported by the Health Promotion Centre. As well as producing and disseminating IEC materials, community mobilization is used to sensitize households on malaria prevention and treatment.

Source: Adapted from RBM Secretariat Country Profile.

8.2 Lessons Learned

The Bank's major malaria control operations have been in Asia and Latin America. Lessons from these areas are not easily transferable to Africa because of differences in epidemiological settings, vectors, and especially institutions. In tropical Africa there are many obstacles: malaria transmission is stable, there is a very efficient vector (*A. gambiae*), human resources are insufficient, and institutional constraints are severe. Nevertheless, several potential lessons can be drawn:

- (a) Effective malaria control is not a trivial matter, and requires both technical and organizational expertise. Most control measures are human-resource intensive and

staff support is essential. Even in Asia and Latin America control programs are partially dependent on international experts.

- (b) All successful malaria control operations are centralized in formulating strategy but fully decentralized in implementation. District and community involvement is essential.
- (c) A large scale is imperative for successful control and measurable results.
- (d) Predictable, multi-year financing is essential. Managers of control operations often have unreliable budgetary resources and are therefore too cautious in scaling up.
- (e) Operational research is crucial to strategic adjustments and corrections. Dealing with changing drug resistance is only one example. Investments are needed in monitoring and evaluation, as well as operational research.

PART II: FRAMEWORK FOR ACTION IN THE AFRICA REGION

The Booster Program will concentrate on the following:

1. Achieve and sustain large-scale impact in malaria control across sub-Saharan Africa, over the long term.
2. Provide financial and technical support in the short-to-medium-term to accelerate program design and implementation, both nationally and regionally.
3. Rapid coverage increases, improved outcomes, strengthening of existing national capacities, through a flexible approach.

1.0 OVERVIEW OF THE PROGRAM

The Bank's efforts will fit within the broader framework of the RBM Partnership and will build on the recent progress in Africa to increase coverage of essential interventions. As the World Malaria Report (WHO, UNICEF 2005) details, significant gains are being made across Africa in the fight against malaria. However, in many countries (even in those making progress), an additional "boost" is needed to cross critical implementation thresholds that will allow for greater impact on disease transmission, morbidity, and mortality.

The Booster Program in Africa will begin with a three-year intensive phase in which clients would be supported to realize rapid and substantial gains in coverage of essential interventions (like ITNs and ACTs) followed by a consolidation phase. The Africa Region of the Bank has committed approximately US\$500 million over the three-year intensive phase. The financing will be drawn from existing country IDA envelopes, which underscores the philosophy that controlling malaria, should be prioritized as a matter of course, not on an exceptional basis. In addition, a smaller regional IDA envelope has been allocated to support cross country activities and regional public goods.

Significant co-financing from donors is expected to be mobilized by a demonstration of the Bank's own commitment up front, together with the emphasis on measurable results. To this end, a conference of major donors to present and discuss the framework for action to boost malaria control efforts in the Africa Region, will take place on September 8–9, 2005 at the Bank's Paris office. Sustaining financial commitment from partners for at least 10 years will be critical to the long-term success and sustainability of the program.

The Bank's approach would be proactive while respecting and supporting country leadership and ownership. The Global Fund to fight AIDS, Tuberculosis, and Malaria (GFATM) also complements existing public health funding, however its financing is insufficient to support

comprehensive national malaria intervention packages.²¹ The Bank will complement the GFATM, WHO, the United Nations Children’s Fund (UNICEF), the US Presidential Initiative on Malaria, and others in ensuring sufficient resources and together with the technical and implementation support needed for effective malaria control. High coverage rates can be achieved and sustained in most countries through combinations of domestic financing, programmatic operations, stand alone projects, and budget support, as determined on a case-by-case basis. High coverage with preventive interventions would decrease the burden of disease and the pressures on health services. It is understood that, if the intensive phase is successful, the recurrent costs required to control malaria should decrease as the disease is brought under control.

Box 4: The Bank’s collaboration with Global Fund and other Partners under the Booster Program

- The Bank will continue to collaborate with the Global Fund, as it is already doing in Benin, Democratic Republic of Congo, Zambia, and other countries. Given the tremendous need, the Global Fund and IDA resources are intended to operate complementarily, and not as substitutes for one another.
- The collaboration with the Global Fund and other Partners will be further strengthened under the Booster Program.
- At the regional level, the Booster’s comparative advantage lies in part in the additional resources it will bring to address cross-national issues. In this context, the Booster Program will collaborate with existing RBM and WHO/AFRO networks to support the implementation of regional activities.

1.1 Action Plan For The Africa Region

Primarily, the Bank will not seek to develop Bank-specific projects. Rather, it will support the development and implementation of comprehensive RBM Country Strategic Plans and support those plans as appropriate given the country-specific needs. Most importantly, the Booster Program is about achieving rapid outcomes through flexible means.

During the Intensive Phase, approximately 17 countries will be supported by the Bank to achieve rapid, measurable progress. For example, countries will be supported to achieve significant increases in household coverage and the use of ITNs and to increase prompt and effective treatment (particularly among children under five years old and pregnant women). It is anticipated that the coverage and utilization gains made during the three-year period will translate into impact on morbidity and mortality over subsequent years.

²¹ UN Millennium Project. Task Force on HIV/AIDS, Malaria, TB, and Access to essential medicines working group. 2005. Coming to grips with malaria in the new millennium. Chapter 3: Review of major initiatives and institutional policies for malaria control. United Nations Development Program.

Country Directors (CDs) and country teams will take the initiative in developing malaria programs as an integral part of their country programs. In order to ensure the fulfillment of the Region's US\$500 million commitment over three years, the Regional Vice-President will monitor progress and periodically review the situation with CDs and others in the regional management team. CDs will designate a focal point who will have the responsibility for coordinating all Bank malaria interventions in a country.

The Bank will mobilize internal and external financial and technical resources to stimulate the production of commodities such as ITNs and antimalarial drugs, lower taxes and tariffs on such commodities; promote long-term commitments to malaria control by governments and civil society groups, and build public-private partnerships for program design, management, and evaluation. Several key partners have expressed interest in a collaborative and stronger effort.

Box 5: Key Features Of The Booster Program

1. Implementation Flexibility

- No fixed prescription: approaches will vary from country to country depending on the specific context
- Free choice from existing Bank instruments and/or free standing operation
- Reliance on existing instruments and institutions at regional and country levels

2. Regional Component

- To address cross-country and cross-border issues.

3. Results Based

- “Malaria focal point” will be accountable for all efforts in each country. Strong M&E support will be provided nationally and regionally

4. Complementarity

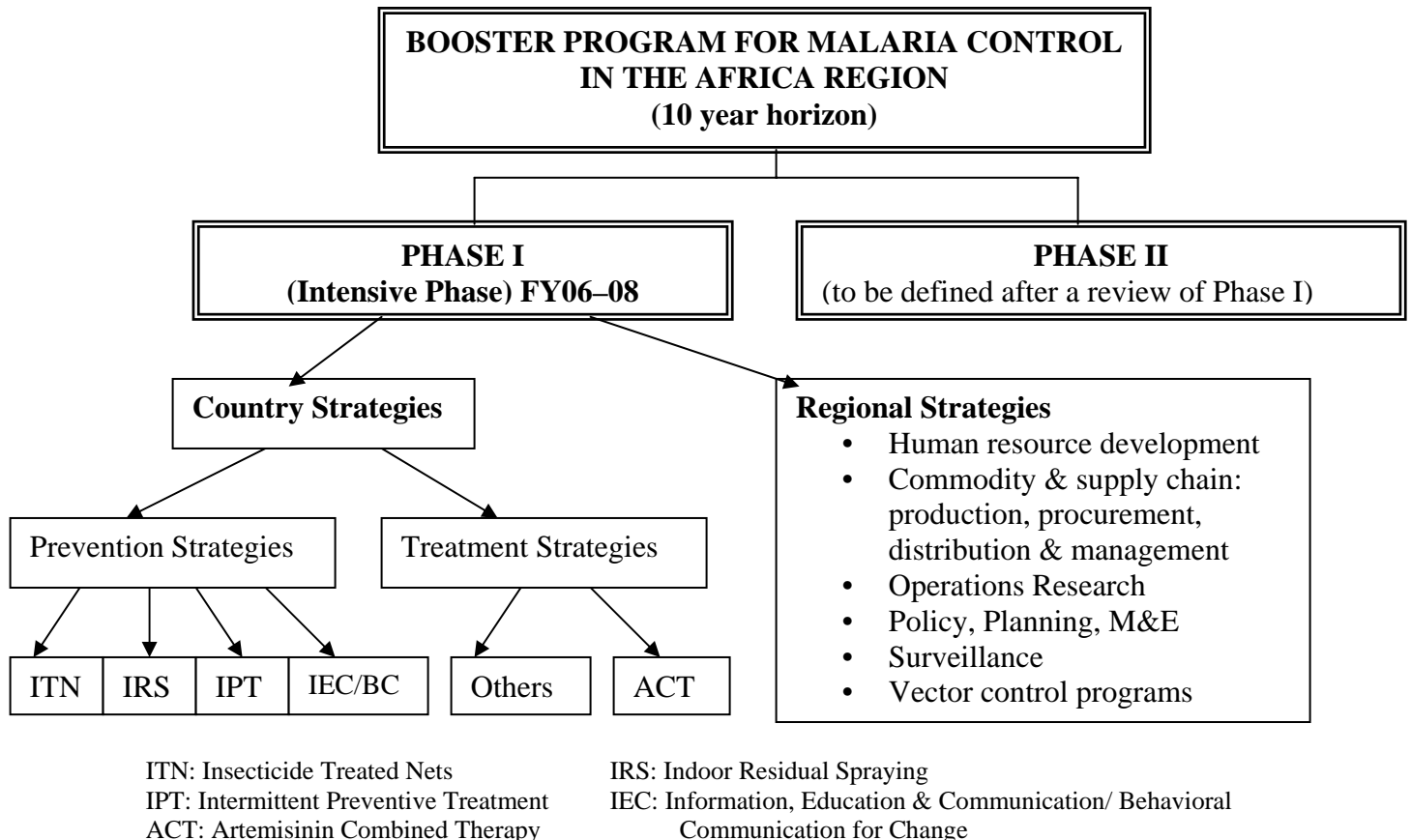
- The Booster Program will complement the efforts of RBM partners and the financing from the Global Fund and other donors.

1.2 The Program

The Booster program will begin with a three-year intensive phase that will span the Bank's fiscal years 2006–2008. In the initial three-year intensive phase the Booster program calls for approximately US\$500 million in IDA allocations to support countries willing and ready to improve and expand their malaria control efforts. In addition, a smaller Regional Allocation is proposed to address cross-border externalities, multi-country malaria control activities, and coordination and implementation bottlenecks across the region. At the end of the initial three years, it is expected that a stock-taking review will be conducted to formulate an expanded second phase program that will seek to consolidate the gains achieved and extend control to remaining endemic areas. The Program will be implemented

both regionally and nationally with emphasis on outcomes, flexibility, and financing options.

Figure 4: The Booster Program for the Africa Region



1.3 Menu Of National And Regional Interventions

In 1952, the famous malariologist Paul Russell listed five²² approaches to malaria eradication. Although Russell’s list was theoretically sound, practical problems limited the success of eradication programs to small, isolated endemic areas and to temperate zones where the disease was not as thoroughly established as in tropical Africa. In recognition of the difficulty of eradication, public health experts began to emphasize control as a more

²² (1) Measures to prevent mosquitoes from feeding on humans (human-vector contact), (2) Measures to prevent or reduce the breeding of mosquitoes, (3) Measures to prevent or reduce the breeding of mosquito larvae, (4) Measures to kill or reduce the lifespan of adult mosquitoes, and (5) Measures to eliminate malaria parasites from humans. See Russell PF. 1952. “Nation-wide malaria eradication projects,” *Anais do Instituto de Higiene e Medicina Tropical* (Lisbon) 9 (2): 331–338. In Chapter 8, “Malaria Control. Saving Lives, Buying Time.” *Economics of Malaria Drugs in an age of resistance*. Institute of Medicine of the National Academy.

realistic option in the worst disease zones. In 2002 Beales and Gilles encapsulated this thinking in three additional strategies that are central to control.²³

- Measures to prevent and reduce malaria mortality (especially to high-risk groups)
- Measures to reduce malaria morbidity
- Measures to reduce malaria transmission

It is also realized that malaria control strategies vary by epidemiological settings and with local malaria endemicity. With these points in mind, the key strategies advocated by RBM based on the epidemiological setting are summarized in Table 3 below:

Table 3: Priority malaria control strategies, by epidemiological setting

Epidemiological setting	Control strategy
Stable endemic malaria <i>Examples: large parts of East, Central and West Africa.</i>	Prevention <ul style="list-style-type: none"> • ITNs for children under 5 years of age, pregnant women and people with HIV/AIDS • IRS, where appropriate • IPT in pregnancy Treatment <ul style="list-style-type: none"> • Early and effective case management with ACTs in areas with drug-resistant <i>falciparum</i> malaria. Parasite-based diagnosis except in children under five.
Unstable malaria <i>Examples: Parts of Southern Africa, some urban areas, plantations, irrigation schemes</i>	Prevention <ul style="list-style-type: none"> • IRS • ITNs • Larviciding Environmental management: <ul style="list-style-type: none"> • House screening, site selection and other vector control and personal protection measures Treatment <ul style="list-style-type: none"> • Early and effective case management with ACTs in areas with drug-resistant <i>falciparum</i> malaria. Parasite-based diagnosis for all cases. Prevention and control of epidemics <ul style="list-style-type: none"> • Surveillance • Epidemic preparedness

Adapted from 2005 World Malaria Report, WHO, UNICEF

Menu of interventions: Depending on the country context, the Booster Program will support a menu of interventions for prevention and treatment of malaria.

²³ Beales PF, Gilles HM. 2002. Rationle and technique of malaria control. In: Warell DA, Gilles HM, eds. Essential Malariology. 4th ed. London: Arnold Publishing.

1.3.1 At the Country Level

1.3.1a Treatment

Uncomplicated/Severe Malaria: For most countries in Africa, WHO now recommends combined treatment with Artemisinin—a medicine derived from the sweet wormwood plant—and a second anti-malarial drug. This Artemisinin-based combination treatment (ACT) is highly effective against *falciparum* malaria—the deadliest form of the disease and the one most prevalent in Africa. A course ACT costs between US\$1.00–US\$2.40 per adult, which is about 10–20 times as expensive as the now-failed or failing chloroquine treatments.

It is important to note, however, that the vast majority of malaria treatment in Africa is not currently through ACTs, but rather through chloroquine and sulfadoxine/pyrimethamine (SP). Failure rates for both are unacceptably high in most of sub-Saharan Africa, particularly in Eastern and Southern Africa. Resistance is growing rapidly in parts of West Africa.

The challenge is to facilitate the widespread use of Artemisinins where appropriate while, at the same time, preserving their effectiveness for as long as possible. Treatment with anti-malarial drugs has a major role to play in preventing severe malaria and death. Since the great majority of patients with fever and other symptoms suggestive of malaria—in Africa’s case these are mostly children under five—receive their initial treatment at home, improving home management of fever is critical.

It is also essential to train health workers to administer anti-malarial drugs and to deal with the potential adverse reactions. In addition, for severely ill patients there should be facilities to provide fluids, glucose, antibiotics, and anticonvulsants. And in hospitals it is crucial to provide prompt confirmation of diagnoses, rapid assessments of disease severity, and appropriate specific and supportive treatment, including safe blood for transfusion.

The introduction of ACT poses substantial technical, and institutional challenges. Most countries in sub-Saharan Africa that will be part of the Booster Program already have ACT policies, or will adopt them soon, but large-scale implementation has begun only in Zambia.

Countries will require technical support to quantify their ACT needs and to phase out older drugs, to set up pharmaco-vigilance systems, adapt malaria case management training manuals, plan the training of trainers, cascade training and supervision after training, develop pre-training materials in medical schools, monitor the efficacy and safety of anti-malaria drugs (with sentinel sites for drugs testing, validating data, and decision making), conduct health facility surveys and community surveys on case management, implement of home-management of malaria (HMM) including pre-packaging of ACT, training of community workers, etc.

The situation is further complicated by two other factors, the limited availability of ACTs and their short shelf-life. There are presently only two international ACT suppliers pre-qualified by WHO, and there are only two combinations of ACT used -- Artemisinin-Lumefantrin and Artemisinin-Amodiaquine. Theoretically there are several other ACT combinations possible and there are many Artemisinin producers who are not yet pre-qualified. Since the shelf-life of ACT is unusually short at about two years, government

procurement and distribution systems need considerable adaptations: special forecasting, staggered delivery, and rapid distribution to ensure that the drugs remain effective when they arrive at remote locations.

Finally, while resistance to ACT alternatives is rapidly rising, there is variance across countries. In parts of West Africa, the resistance to chloroquine and SP is not as severe as in East and Southern Africa. Given the implicit tradeoffs in a resource constrained setting, all options for reducing transmission should be considered. The Bank should follow a pragmatic approach that results in the greatest impact on the malaria burden over the shortest time period.

Box 6: The challenge of drug-resistant malaria

Faced with increasing resistance to first-line treatments (i.e. chloroquine and SP), countries are revising their antimalarial drug policies and exploring alternative treatment options. Experience in some parts of Southeast Asia has shown Artemisinin-based Combination Therapy (ACT) to be successful in treating and reversing the spread of drug-resistant malaria. Based on such evidence, WHO has revised its guidance to countries to promote the use of ACT when a new drug policy is required.

There is a dual dilemma in responding to chloroquine-resistant malaria. First, at US\$1–US\$2 per course of treatment, ACTs are 10–20 times as expensive. Second, there is a potential biomedical crisis. Since the Artemisinin-based drugs are the *only* first-line antimalarial drugs appropriate for widespread use that still work against chloroquine-resistant malaria parasites, malaria’s toll could rise even higher if resistance to Artemisinin were allowed to spread. The challenge is thus twofold: to facilitate the widespread use of Artemisinin where appropriate while, at the same time, preserving their effectiveness for as long as possible. Preserving the effectiveness of ACTs means delaying the development of resistance, which creates a benefit for all—“a global public good.” In July 2004, a report published by the Institute of Medicine (IOM), recommended a sustained global subsidy of ACTs, in which Artemisinin are co-formulated with other antimalarials, as the most economically and biomedically sound means to meet this dual challenge. *Without external funding, neither governments nor consumers, who bear most of the cost, can afford ACTs at current prices.*

1.3.1b Vector Control and Disease Prevention

(i) Indoor Residual Spraying or ITNs? Both IRS and ITNs are meant to provide vector control and thereby reduce transmission of the disease. While implementation strategies will vary across countries and by epidemiological settings, there are basic principles to be kept in mind.

ITNs act primarily by providing an insecticidal surface inside a house, which is typically where mosquitoes land after feeding. IRS acts in a similar fashion except instead of hanging a treated fabric, the interior walls (surfaces) are sprayed to similar effect. Both strategies have advantages and disadvantages.

IRS programs involve significant training and human capacity to maintain, particularly in rural areas with weak transportation infrastructure. Coverage within a certain geographical areas needs to be quite high (80%–90%). The effect of IRS, however, once successfully carried out, can be dramatic in terms of reduced malaria burden. However, if IRS programs are stopped prematurely (due to capacity problems, political commitment, etc.), malaria can return equally dramatically. Because immunity tends to decline along with transmission, interrupted control sets a dangerous stage. Resurgent malaria catches people with reduced immunity—reduced because of earlier control—often yielding higher mortality.

ITNs are very useful, particularly Long-Lasting ITNs, which remain effective for as long as the net itself lasts—four to five years as opposed to approximately six months for conventional ITNs. Effective ITNs supply the same insecticidal surface area as IRS does, but without requiring spray teams. However, to obtain a mortality reduction in young children, over 60% ITN utilization (measured as the percent of young children sleeping under the nets) is required. Unfortunately, ITN utilization remains below this critical threshold in most of sub-Saharan Africa because ITNs are expensive, not always available, and are not always in demand because communities are not always sensitized to their benefits.

(ii) Insecticide-treated mosquito nets (ITNs): ITNs have been evaluated in 5 randomized controlled trials in a variety of transmission intensity settings in Africa and have been consistently associated with a reduction in *all-cause* child mortality of 15–20%.²⁴ The overall effectiveness of ITNs has been linked to three key factors: (1) population coverage; (2) the effectiveness of the net’s insecticide (i.e., dipping or re-dipping of the ITN as needed to maintain its insecticide concentration); and (3) consistent use of the ITN each night. The overall impact of ITNs is determined by population coverage such that the higher the coverage, the greater the benefit. In addition, with high coverage in a geographic area, it has been shown that even households without ITNs benefit from living nearby to households with ITNs—the higher the concentration of households with ITNs, the greater the impact of this “community effect”.

Long-Lasting Insecticide Treated Nets can survive around 20 washes and still remain effective. The unit cost is about US\$5.00, which is cheaper than a regular net re-dipped to be effective over the same period. Long-lasting nets are clearly preferable, but there are only two suppliers worldwide now producing—Sumitomo Company and Westergard—and only one more with plans to do so. Supply bottlenecks are common and competition is minimal. A further option has not yet been approved by WHO, which is an impregnation kit by Bayer that impregnates a regular net with a long-lasting insecticide.

(iii) Indoor Residual Spraying (IRS) IRS has been shown in the past to be very effective in controlling malaria transmission and consequent malaria mortality and morbidity.²⁵ In a recent review carried out by RBM, IRS and ITNs have been shown to have roughly similar

²⁴ Lengler, C. (2004) Insecticide-treated bed nets and curtains for preventing malaria. *Cochrane Database of Systematic Reviews*, The Cochrane Library: Oxford.

²⁵ Kouznetsov, RL. (1977) Malaria control by application of indoor spraying of residual insecticides in tropical Africa and its impact on community health. *Tropical Doctor*, 7: 81–91.

efficacy in reducing malaria transmission and malaria mortality and morbidity. In both cases, overall efficacy is directly linked to the coverage rate.²⁶ IRS has been used to control transmission in several southern Africa settings characterized by low, seasonal risk. The World Health Organization (WHO) has advocated IRS use only where the public health infrastructure is adequately developed and financed²⁷ because the process is highly manpower intensive. Many African national plans do not currently advocate for IRS except under limited epidemic transmission settings or in particular urban and peri-urban settings. Regardless of the policy decisions about when and where to deploy this intervention, IRS programs must attain high population coverage (preferably >80% in the target population) to achieve the desired impact on malaria. In summary, IRS remains a valuable intervention in malaria control when the following conditions are met: a high percentage of the structures in an operational area have adequate sprayable surfaces and are well-sprayed, a majority of the vector population is endophilic, i.e. rests indoors, and the vector is susceptible to the insecticide in use.

The Booster Program will support IRS strategies with a range of insecticides in countries where it is appropriate.

(iv) DDT and alternative insecticides for Indoor Residual Spraying: *Indoor Residual Spraying does not necessarily use DDT.* DDT is only one of 12 insecticides suitable for IRS. WHO recommends that countries should select the insecticide or combination of insecticides for IRS based on local situation analyses and resistance levels. The Integrated Vector Management Framework provides a particular pragmatic approach that considers local vector epidemiology, insecticide resistance, and waste management schemes. The primary concern with regard to DDT use is environmental contamination from agricultural (non-malaria related) use. In May 2004, the Stockholm Convention on Persistent Organic Pollutants came into affect. While the Convention clearly states the need for alternative insecticides to DDT for vector management, it notes that DDT may still be used where it is deemed necessary.

As noted above, other insecticides are available for IRS. Resistance levels to these insecticides vary across sub-Saharan Africa. Pyrethrum is an extract of dried chrysanthemum flowers, and along with its natural and synthetic derivatives, it has good repellency but does not last very long. Newer synthetic compounds such as permethrin and deltamethrin are more stable than naturally occurring products. In contrast to these insecticides, the residues of DDT remain active for up to a year following application to impervious surfaces. This year-long activity, however, yields advantages and disadvantages. While the persistence of DDT is one factor that has generated environmental concerns, it is this same persistence that makes DDT a useful insecticide for malaria control. Spray teams may be required to provide IRS only once a year instead of many. The Booster Program will take a pragmatic country-by-country approach in response to client requests and recommendations from technical partners such as WHO. Environmental safeguards toolkits

²⁶ Lengler C, Sharp B (2003) Indoor residual spraying and insecticide-treated nets. In Technical Report: Reducing Malaria's Burden: evidence of effectiveness for decision makers. Global Health Council.

²⁷ http://rbm.who.int/partnership/wg/wg_itn/docs/RBMWINStatementVector.pdf

will be prepared by the Booster Program to assist Bank project staff in handling these aspects.

1.3.1c Environmental Management and Other Vector Control

In certain epidemiological settings, other vector control methods (than ITNs and IRS alone) can be a useful option to control the mosquito vector. Filling (and avoiding the creation of) stagnant water sources when developing roads and other infrastructure projects is one example. Disrupting the mosquito life cycle, for example, by using larvivorous fish, which eat the mosquito larvae, may be a relatively inexpensive option. These measures, however, are highly dependent on vector behavior and are not universally applicable.

As the WHO notes²⁸, in general, other (non IRS or ITN) control methods are more demanding in terms of local technical expertise, and they are less universally applicable than ITNs and IRS. However, in particular local situations they may greatly enhance the effectiveness of interventions directed at adult mosquitoes (which are targeted by IRS and ITNs) or, especially in areas of low transmission, replace them. The following categories of environmental management are most often discussed:

Larviciding – Is only indicated for vectors that tend to breed in permanent or semi-permanent water bodies that can be identified and treated and where the density of the human population to be protected is sufficiently high to justify the treatment with relatively short cycles of all breeding places.

Environmental Management – approaches to vector control aim at modifying the environment to deprive the target vector population of its requirements for survival. This reduces human-vector contact and renders the conditions less conducive to disease transmission.

Fogging or area spraying – aims at killing flying mosquitoes by contact with the insecticide in the air. It must be properly timed to coincide with the time of peak adult activity. **It has very limited effectiveness for malaria control.**

1.3.1d Protection Of Pregnant Women By IPT In Areas Of Stable Malaria Transmission

Intermittent Preventive Treatment in pregnant women (IPT) with safe and effective anti-malarials given at specified intervals has been shown to reduce the frequency of malaria, placental parasitaemia, and anemia in mothers, and has been shown to reduce the frequency of low birth weight in newborns.²⁹ Because malaria transmission is highly intensive in much of sub-Saharan Africa, and because the preventive benefit of IPT is only realized by the women receiving it, high IPT coverage among pregnant women is critical for the overall population benefit of this intervention. Numerous national-level surveys have demonstrated that in most African countries, a very high proportion of pregnant women attend antenatal care, most making an average of 3–5 visits per pregnancy. Antenatal programs can deliver

²⁸ WHO RBM Department, 2005. www.who.int/malaria/othermethods.html.

²⁹ Lengler C, Sharp B (2003) Indoor residual spraying and insecticide-treated nets. In Technical Report: Reducing Malaria's Burden: evidence of effectiveness for decision makers. Global Health Council.

IPT through directly observed therapy at these visits. For maximum effectiveness, programs should seek as high coverage with IPT among pregnant women as possible.

1.3.1e Human Capacity Development

The shortage of human capacity is one of the key challenges to be overcome by the Booster Program. Accordingly, the Booster Program will finance in-country and regional training on topics such as planning, management, implementation, monitoring, and coordination of malaria control activities. The program also will provide technical assistance to improve national organization and management.

1.3.1f Communications and Behavioral Change

The Booster Program aims to rapidly increase ITN coverage and scale up prompt, effective treatment with ACTs. Both these strategies require behavior change at many levels, especially in communities. The success of the program will thus be dependent on target populations' acceptance and adoption of ITNs and ACTs. Indeed, making ITNs and ACTs available and accessible to the population does not guarantee utilization. The program will be challenged by some traditional beliefs, illiteracy, mistrust in formal health systems, fatalistic attitudes, and limited understandings of recommended preventive and curative regimens. To overcome these issues the Booster Program will have a strong IEC component and will utilize civil society in the actual delivery and grassroots behavior change campaigns.

The IEC component will promote behavior change at all levels, using locally-appropriate tools such as the mass media, social marketing of malaria-related commodities, community mobilization, health education, improving health providers communication skills, and policy advocacy. The selection of the tools and design of the IEC program will be based on research findings.

The Booster Program will work in partnership with RBM/USAID/ NetMark³⁰, to scale up and/or adapt successful interventions in countries where strong IEC components are already in place.

At the *Country level* the communication strategy will target three main facets:

(a) Build awareness and disseminate information to stakeholders

- i) **Media:** Help the media understand malaria control as a core health and development issue. Advocate for better communication with the general public on the challenges of malaria control.
- ii) **Policymakers/Parliamentarians:** Raise awareness for malaria control among policy makers and decision makers at all levels, including the community, to foster awareness of the available resources and promote demand for malaria-related commodities.
- iii) **Health Providers and General Population (especially women):** Country-specific IEC programs will be designed to disseminate culturally appropriate, malaria specific

³⁰ In one effort to help stimulate commercial investment in ITNs, the USAID launched NetMark, a consortium including 13 major firms. NetMark designs and implements consumer-focused marketing campaigns based on behavioral theory and research using a full range of IEC tools.

information through appropriate media (electronic, print, interpersonal, event-based, plus traditional approaches such as songs and puppet shows).

(b) Involvement of civil society for implementation

The Booster Program will coordinate with civil society organizations (CSOs), which have a comparative advantage in behavioral change efforts because they often have the confidence of the public. CSOs will likely be key partners in delivering IEC at the grassroots level. In countries or regions where the reach of the government is either limited or absent, civil society and community-based organizations will have a doubly critical role.

(c) Development of communication capacities

IEC capacity varies from country to country, so it will be necessary to:

- Assess the capacity of government and civil society to develop and deliver communications campaigns.
- Given the varied mechanisms that will deliver the Booster Program for malaria control, determine how to support the organizational structures which will be responsible for the communication programs.
- Produce an operational communications manual covering all facets of the program.

1.3.1g Strengthening Health Systems

Weak health systems are increasingly recognized as a ‘binding constraint’. In areas with weak health systems, prompt and effective malaria treatment is usually not possible, for instance. And, of course, malaria control programs fall primarily under health departments, so it is essential that they have sufficient capacity. Emphasizing a malaria control program alone without concurrently investment in the health system would jeopardize long-term sustainability.

1.3.1h Commodity And Supply Chain Management

The Booster Program’s success will require careful supply chain management because commodities—ITNs and ACT above all—lie at the heart of its strategy. In both the short-term and the long-term, managing the supply chain will be crucial to increase and maintain coverage with ITNs, IPT, and anti-malarial drugs.

1.4 Supporting Malaria Control At The Region And Sub-Regional Levels

Preliminary Options for Regional Support

To significantly increase anti-malaria intervention coverage across 17 countries in sub-Saharan Africa over three years, the Bank will need to maximize gains from economies of scale, regional public goods, and cross-border externalities. While the central focus of the Booster Program is undoubtedly at the country level, there will be need to finance a regional support framework that would augment and leverage the individual national efforts. Such a system would be appropriate where a multi-country approach is indicated for technical reasons, including cross-border foci, or for reasons of efficiency, as might be achieved by joint procurement in some cases.

1.4.1 Regional Thematic Areas

Particular emphasis will be paid to the following thematic areas through the Regional Program:

1.4.1a Policy, Planning, Monitoring and Evaluation

Development Objective: To facilitate Booster Program implementation through cross-country support for comprehensive investment planning, implementation support, and impact assessments. Implementation will be carried out in close collaboration with the Bill and Melinda Gates Foundation-supported Malaria Control and Evaluation Project in Africa (MACEPA) and others.

Policy, Planning, Monitoring, and Evaluation (PPME) activities will form the backbone of support through Regional Programs. As multiple countries plan, budget, and implement over a relatively short time, the need for consistent support may become a limiting factor. While IDA monies will focus on financing country-level activities with multi-country externalities, co-financing from others donors will also be required to finance high-quality technical support as countries expand their malaria control programs.

Joint investment by funding groups and the countries is needed to develop a coordinated technical assistance resource, with competencies including:

- Technical support in malaria program planning, monitoring and evaluation.
- Human and institutional capacity building at national and regional levels for PPME.
- Standardized yet flexible methodologies and approaches for country PPME.
- Documentation capacity to gather evidence for local and global advocacy.

The joint investment will be a partnership project engaging the RBM Secretariat, the participating malaria-endemic countries, and the supporting/implementing organizations – initially representing investment from the World Bank and MACEPA. This investment will not establish new mechanisms or entities, but will draw on existing efforts, strengthen their operational capabilities and use existing RBM and partners’ infrastructure (e.g., RBM Partnership Secretariat for coordination responsibility, RBM sub-regional networks, technical guidance from the RBM Monitoring and Evaluation Reference Group (MERG), technical capacity from various organizations with direct experience in planning, monitoring, and evaluation).

1.4.1b Operational Research, Training, and Resistance Monitoring

Development Objective: To support regular monitoring of drug and insecticide resistance, operational research to facilitate implementation, and training for program staff. Implementation will be carried out in close collaboration with WHO and technical partners with comparative advantage in training and disease surveillance.

Scaling-up to achieve impact in malaria control will require “learning by doing”. As lessons are learned throughout sub-Saharan Africa, there will be a need for a central knowledge bank to collect and disseminate useful information.

For example, the capacity of malaria control program managers and related personnel could be augmented through in-country and regional training. Courses and individual support would focus on malariology, malaria situation analysis, planning, implementation, management, and monitoring and evaluation. The need for improved planning and budgeting capacity within malaria control programs is particularly important. Many program managers now have difficulty operating within larger programmatic support packages (PRSCs and SWAs, for instance), partly due to the lack of comprehensive planning and budgeting at the central level, and also due to insufficient engagement with district authorities during annual planning and budgeting sessions.

Supporting disease surveillance and monitoring drug and insecticide resistance as a part of policy dialogues will be increasingly important as countries scale up because there are no treatment alternatives to ACT and because it is crucial to sustain IRS once it has been started. Potential partners may include universities, existing sub-regional networks, and centers of excellence.

1.4.1c Procurement and Supply Chain Management

Development Objective: To provide cross-country support for demand forecasting and to overcome antimalarial commodity procurement and supply chain bottlenecks. Strategies will include pooled multicountry procurement, when appropriate. Further conceptualization will be done in close collaboration with the International Finance Corporation, the UN Foundation, RBM Malaria Medicines and Supply Service, the Global Fund, and others.

Difficulties with commodity technical specifications and quality control have hampered malaria control efforts in the past, making this a fundamental issue for the Booster Program. Given the partners' limited experience in procurement of the frequency and magnitude required during the Intensive Phase, there is a need for extra attention to product selection, order quantities, and technical specifications throughout the procurement process. In addition, pre- and post-shipment inspections are needed.

Production delays combined with procurement and distribution bottlenecks plague current efforts to expand malaria control. The importance of reaching coverage thresholds underscores the centrality of commodities within of the Booster Program. Facilitating the development and maintenance of information systems to coordinate between agencies could greatly smooth production and procurement. Obtaining and sharing accurate information is a clear challenge to proper malaria control. An example of an existing coordination mechanism is the Malaria Medicines and Supply Service, which seeks to coordinate forecasting and supply management to assist timely availability of critical anti-malaria commodities.

The Booster Program will play an important role in attracting the private sector to the malaria commodities market by providing stable demand. The Bank Group's International Finance Corporation (IFC), which has a particularly strong comparative advantage in working with the private sector, will work with the Africa Region and with key partners in this enhanced effort.

The IFC could potentially finance private companies involved in such activities as drug manufacturing, net and diagnostic tool development and production, and drug distribution. To date the private sector has not met demand in any of these areas. The draft business plan of the Roll Back Malaria Initiative for “Stimulating development, manufacturing and widespread distribution of long-lasting insecticidal nets” sets out a useful framework within which the private sector and potentially the IFC could engage. Potentially applicable measures include:

- **Advanced purchase contracts for drugs, nets, diagnostics, or other inputs with a medium-term duration (seven years or longer):** This would potentially give a manufacturer the incentive to invest, with the certainty of a guaranteed market.
- **Buy-downs of drugs, nets, diagnostics, and so forth:** This would close the gap between ability to pay and demand.
- **Grant funding to cover first loss or a Debt Service Reserve Account:** If IFC were to finance a local producer directly or through a financial intermediary, grant funding could potentially be used to cover a first loss or support a Debt Service Reserve Account.

The Bank could potentially increase the attractiveness of investment by private sector with a variety of options:

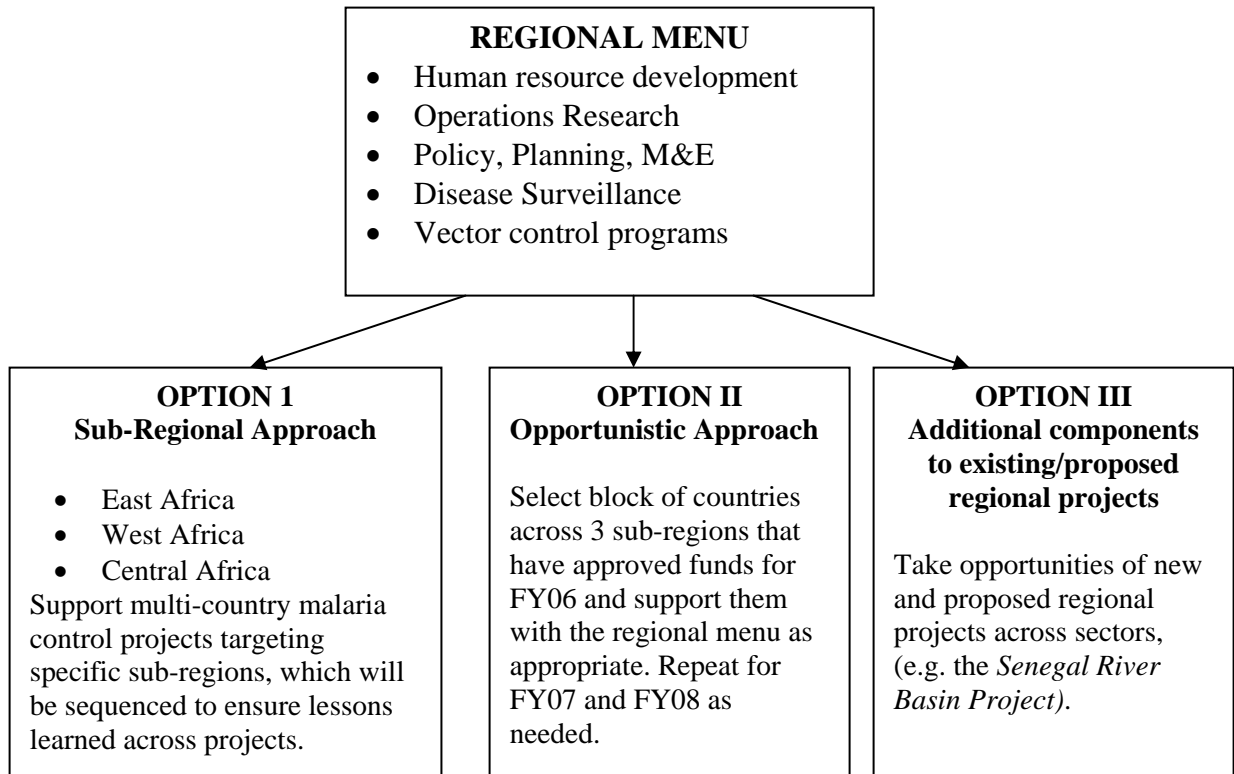
- ***Loan buy-downs or other mechanisms to lower the cost of capital.***
- **Improved transparency and streamlining of regulatory frameworks:** Currently these are major barriers to entry in many countries. If these could be tackled it would certainly benefit a company’s bottom line and enhance the incentive to supply a given market.
- **Working to lower taxes and tariffs:** Again, these may discourage market entry.

1.4.1d Multicountry Malaria Control Opportunities

Development Objective: To take advantage of opportunities across countries for aggressive malaria control through opportunistic engagement and/or stand-alone operations, as appropriate.

Malaria transmission crosses country borders, not because the mosquito crosses borders (mosquitoes rarely fly more than a mile in their lifetime) but because people cross borders, bringing malaria with them. As a result, decreasing disease burden on one side of a client border without a similar decrease on the other side is unlikely to yield many benefits on either side. To date, these opportunities have generally gone unexploited in sub-Saharan Africa. Experiences from the Emergency Locust Control Project, the HIV/AIDS Treatment Acceleration Program, the Chad-Cameroon Pipeline Development Project, and many others have generated a body of knowledge from which the Bank will draw in supporting clients to implement multi-country malaria control activities when appropriate. This approach may be particularly useful among groups of smaller countries, such as those in West Africa, as was proven by the Onchocerciasis Control Program.

Figure 5: Proposed Options For Regional Support



2.0 CHALLENGES AND BOTTLENECKS

It is critical to identify the key implementation challenges the Booster Program will seek to address. Those challenges can be broadly categorized as follows:

- Health systems constraints
- Human capacity constraints
- Procurement and supply chain constraints
- Financial constraints

2.1 Addressing both disease-specific interventions and support for health systems

Weak health systems need to be improved, both for sustainability and to ensure that a more vigorous effort to control malaria does not distort the rest of the system. Efforts to strengthen malaria control activities will take account of systemic constraints in human resource, drug procurement and management, planning and budgeting, and monitoring and evaluation. Immunization campaigns and maternal and child health services provide opportunities for integration of malaria control into routine health services.

However, health system constraints *alone* justify neither inaction nor a continuation of the inadequate commitment to malaria control. There is evidence that, in disease control and

public health, major interventions have worked on a large scale even in difficult settings with extreme poverty and weak health systems (Levine et al., 2004).

2.2 Human resources capacity

The success of the Booster Program will largely depend on the availability and skillfulness of the health personnel responsible for management and implementation. Evidence suggests that most low-income countries in Africa with the highest disease burden have the lowest ratios of health staff to population (2005 UN Millennium Project). The Booster Program will need to develop human resources with training in various relevant topics, including management, leadership training, evidence-based decision making, implementation and monitoring of programs, assessing the impact of interventions, and data management. Technical training to build the special skills to study antimalarial therapeutic efficacy, insecticide susceptibility of vector mosquitoes, and vector ecology and behavior may require further investment for the long term sustainability of the program.

2.3 Procurement and Supply Chain constraints

In the short-term, the Booster Program will need to intensify implementation while facing major supply and system-related challenges. These include global shortages of effective drugs (ACTs) and long-lasting impregnated nets (LLINs), the short shelf lives of ACTs, weak supply chain systems, long pipelines for commodity distribution, and lack of logistic capacity that must underwrite forecasting, procurement and inventory management.

In addition, the Booster Program—more so than other programs—will also require strong inter-sectoral coordination since some of the interventions, including spraying or re-treating ITNs, are in some cases best managed outside the Ministry of Health.

The Bank will work to lessen supply constraints by making the malaria commodity market more attractive to the private sector. As an early step, a preliminary supply chain assessment would be critical to determining the weaknesses and the strengths of the existing system.

2.4 Financial constraints

Financial constraints remain *an urgent and key factor, but are not the only important factor* impeding malaria control in most countries. As with broader health and development issues, additional financing is likely to make a difference when combined with sound policies, good governance, effective implementation arrangements that suit the local context (World Bank, 2002; World Bank, 2004), technical rigor, better use of existing human resources and the *concurrent improvement* of human resource capacity in the countries (Chen et al., 2004).

Financing mainly for ACTs will be a major challenge. It is estimated that around US\$2 billion per year is required to effectively combat malaria in the Africa region. Of this amount US\$1 billion is needed for ACTs. Financial support over the past years have increased, however, currently only about one quarter of this amount is available (World Malaria Report, 2005. WHO, UNICEF).

Box 7: Global Subsidy of Artemisinins (ACTs)

Subsidies for ACTs is not within the scope of the Booster Program, but they would greatly improve the odds of success in the low-income countries of the Africa region.

The widespread growing resistance by *Plasmodium falciparum* to the traditional first line antimalarial drugs like chloroquine and sulphadoxine has made the situation for malaria treatment very precarious. Currently, Artemisinins are the only first-line antimalarial drugs appropriate for widespread use. The challenge therefore, is to facilitate widespread use of Artemisinins while, at the same time preserving their effectiveness for as long as possible. To achieve this goal, a sustained global subsidy of Artemisinins is required as recommended by the Institute of Medicine (IOM). The IOM Committee further points out that an upfront subsidy would also help to lower the costs of standardization, procurement and distribution of the drugs. Additionally, subsidies will help to control counterfeit antimalarial drugs from entering in the market and allow low-income countries to choose ACTs as their first line treatment (IOM Steering Committee meeting on Malaria, July 2005).

Arrow, Panosian and Gelband in 2004 asserted in their publication that by preserving the effectiveness of ACTs the development of resistance will be delayed, which creates a benefit for all, i.e. “a global public good” (Arrow, Panosian, and Gelband, “Saving Lives, Buying Time: Economics of Malaria in an Age of Resistance”, 2004). The validity of “global public good” was questioned by the some members of the RBM Resources and Financing Working Group and a study was conducted to confirm that this was the correct designation. The findings of that research are now available and the results support Arrow et. al. It concludes that a global subsidy for two or more ACTs, under plausible scenarios, is likely to be far more effective in delaying the onset of resistance and in saving lives. The report also illustrates that such an intervention is highly cost effective in averting deaths and alleviating disease burden.

Malaria is most prevalent among poor and rural populations of low income countries, many of whom earn less than US\$1 per day. It is postulated that a large subsidy near the top of the distribution chain will help to lower the price to consumers at all points of sale. Producers are already promising that with incentives of a secure and large market, the wholesale prices for a course of ACTs will fall to US\$0.50–US\$1.00 or possibly lower within 2 years. However, this projected price is still 5 to 10 times higher than the price of chloroquine or SP in Africa, making Artemisinins essentially unaffordable for most sub-Saharan governments and individuals, especially the poor, the women, and the children who are most likely to suffer and die from malaria.

3.0 IMPLEMENTING THE BOOSTER PROGRAM

Business Model with Emphasis on Outcomes, Flexibility in Financing and Options

3.1 Background

The Bank’s Africa Booster Program for malaria control is committed to building on the lessons learned from past malaria control programs, particularly in the region and will frame the Booster program around the key principles underlying the Poverty Reduction Strategy initiative: ownership, strong results focus, multisectoral perspectives, and country-led partnerships. A sufficient scale of control is imperative for success. Predictable multi-year

financing is essential because Managers of control operations often experience unreliable budgetary resources and are therefore cautious in scaling up.

3.2 Integrating the Booster Program into various instruments at the country level

Choice of approaches and instruments: The Booster Program is not a new initiative and the Program aims at boosting countries' national action plans to combat malaria. Keeping in mind the need to achieve the critical coverage thresholds, the Bank will: (i) make maximum use of existing instruments and approaches (PRSCs, SWAPs, CDDs, etc.) by enhancing them to address malaria control efforts explicitly; and/or (ii) undertake more intensive malaria control programs to ensure major gains in coverage with effective interventions, thereby maximizing health and economic gains as rapidly as possible. These options, depicted in the proposed framework diagram below (Figure-6), are not mutually exclusive. It is important to emphasize that programs will not be implemented rigidly with only one model for everyone. Rather, each country will tailor its booster strategy and make the decision to use one or the other option or a blend of both. A country may also decide to promote a multi-sector approach by analyzing what other sectors can do to strengthen health impacts, taking into account the level of coordination and capacity which exists in that country. **The Booster Program does not prescribe the instrument or sectors to be used in malaria control. While the Health sector will play an important role, it is important for the Booster Program to work across sectors. Decisions will be made by CDs, country teams and clients on a country-to-country basis.**

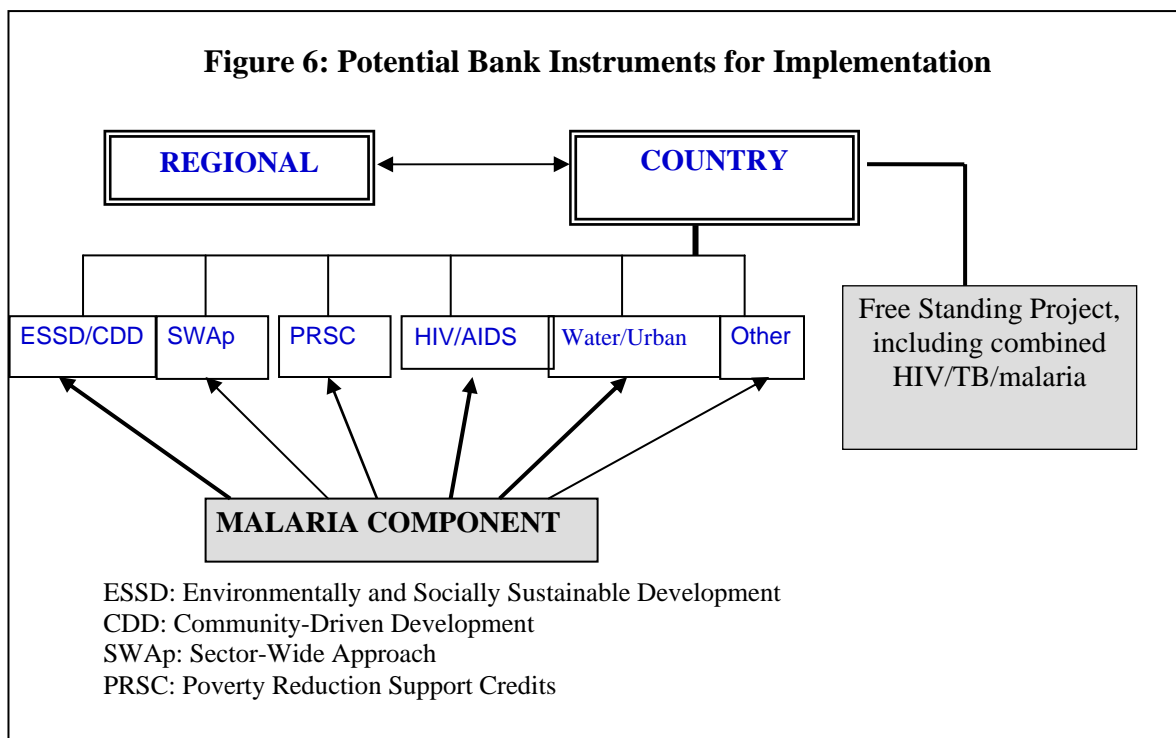
3.2a Countries will have several main options for accessing funds and technical support from the Bank

1. *Enhancing existing instruments (e.g. PRSCs and health SWAPs) to support malaria control.* Wherever feasible, the Malaria Control Booster Program will be used to enhance health through existing lending instruments such as SWAPs and PRSCs to include stronger malaria control programs, with additional financing, technical support, monitoring and evaluation. The PRSC for Rwanda is a useful example. As per the recommendations of an RBM mission to help prepare the credit, which built on the already advanced thinking of the National Malaria Control Program, the Ministry of Health has prioritized technically-sound malaria control activities within the health sector plan of work, including within the adopted monitoring and evaluation matrix and within the Medium Term Expenditure Framework (MTEF). In Ghana, in the context of the SWAp/health there is considerable room for improvement. Present ITN coverage is only 3.9%. Beyond the health sector, PRSCs provide opportunities for cross-sectoral work on malaria, and projects in education, agriculture, environment, and transport sectors could also be used to advance malaria control.
2. *Malaria Control Projects at the country or sub-regional level.* Based on country requests, the Malaria Control Booster Program will support Malaria Control Projects, as in the successful examples of Brazil, India, and Vietnam. Project design and objectives will depend on the local context—government policy, disease burden and distribution, the particular mosquito vector, and local management capacity.

Countries may choose to use Community Driven Development (CDD) approaches, rural sector programs, or water sanitation/urban programs, depending on the context. These malaria control projects would supplement, not disrupt, systemic health-sector development programs. The success of the Onchocerciasis Control Program as well as the ongoing lessons from the Bank’s work on HIV/AIDS will be applied to the challenge of addressing systemic issues while improving coverage and outcomes in the short to medium term.

3. *Combined HIV, Tuberculosis and Malaria Control Projects.* Another option is to develop and implement operations covering HIV, tuberculosis, and malaria, such as those in Angola and Eritrea.
4. Free standing operations, if deemed necessary, can also be envisaged, as in Benin.

Integrating malaria into these different approaches can be done in several ways: (i) through the restructuring of ongoing relevant operations; (ii) additional financing for those projects already being implemented; and (iii) through inclusion of malaria control activities in new operations in the pipeline for FY06–FY08. Although the first two options are not excluded, given the time it takes to restructure a project—which amounts to almost the same time as the preparation of a new one—and the constraints in securing additional financing, the last option, recommended by Operational Policy and Country Services, is the one which will be given the priority because of the relative speed with which the integration of malaria control activities can be accomplished.



4.0 COUNTRY SELECTION

Seventeen countries are proposed for inclusion in the Booster Program's first phase. Selections are based primarily on the readiness assessments made by the Roll Back Malaria (RBM) partnership in 2003. Given stable malaria transmission (holo endemic) in most of sub Saharan Africa, it was agreed that selections could not be made on the basis of disease burden alone. The RBM assessments divided countries into three categories based on the burden of disease, government readiness, and the availability of GFATM funding (see Annex 1). Most countries in the first category—those most ready to take action—are included in the Booster Program. The Bank will also exploit windows of opportunity when interest is expressed by other countries, which is why some in categories II and III are also included among the 17 countries where the Booster Program will begin. On this basis, a tentative list of countries was proposed for inclusion in Phase One. Category I countries include Benin, Ethiopia, Eritrea, Ghana, Kenya, Mali, Malawi, Nigeria, Senegal, Sudan, Tanzania, Uganda, and Zambia. Burkina Faso was chosen from Category II, and Angola, was chosen from Category III. Following recommendations by WHO/AFRO, Rwanda was shifted from Category III to I and the Democratic Republic of Congo was moved from Category III to II; both countries were then included in the Booster. A summary fact sheet for each of the selected countries is presented in Annex 2. The fact sheets include the objectives of the national malaria action plan, the epidemiology of malaria in each country, a summary of bottlenecks, the availability of GFATM funding, and the Bank's instrument selected for the Booster Program.

Given the fact that the financing will come from IDA allocations to countries, once there is an agreement on the countries to be candidates for the Booster Program, the Country Directors will be responsible for discussing with Governments the level of financing to allocate to malaria from their IDA allocations and the choice of instruments to be used to channel those resources. **The Country director will play a pivotal role in the program.** For each country, the CD will designate a task team leader (TTL) who will serve as the country coordinator for malaria. This TTL may not have direct responsibility for the actual projects through which the country malaria program is implemented, but he/she will be accountable to the country director for the effective coordination of activities through the various projects and for flagging issues for senior management's attention.

To avoid fragmentation and maximize impact, all malaria TTLs will follow some basic principles when launching the Booster Program in any given country:

- (i) Dialogue with the government will take place within the framework of the Roll Back Malaria Partnership, i.e. the Bank team will include key partners in discussions with the Government and will ensure that IDA-supported activities are completely aligned with the national malaria control action plan in terms of targets and implementation modalities.
- (ii) The team will take stock of key issues, determine gaps and areas of the Bank's comparative advantage.

(iii) The Bank will ensure that the instruments to be “boosted” will make a significant contribution and if not, propose additional ways to do so (i.e., a new operation, a technical assistance loan, etc.).

(iv) The Bank will ensure that a proper M&E mechanism is included in the Booster, particularly if several instruments from several sectors are chosen.

(v) The Bank will pay particular attention to avoiding any crowding out of other priority public health interventions by the Booster.

(vi) Whenever necessary, the Booster Program should be prepared to invest in health systems strengthening since weak health systems are often a binding constraint. A Bank resource team will provide the support necessary to TTLs and CDs in the design and implementation of the Booster Program.

(vii) During preparation, particular attention will be paid to the elaboration of a procurement and supply chain commodity management and distribution plan.

(viii) Provisions will be made for a social assessment which will serve as a background for designing IEC/BCC campaigns.

4.1 Sequencing of Countries

With regard to sequencing, the Bank will adopt an opportunistic attitude. This will be based on country readiness, interest and willingness to boost its malaria control programs to reach the coverage thresholds for impact.

4.2 Other important areas of Bank intervention under the Booster

The Bank is in a unique position to engage in a macro-economic dialogue at the highest levels of government to potentially channel more public resources toward MDG targets via country-led and country-owned processes (Poverty Reduction Strategy Papers; PRSCs, HIPC initiative; Medium-term expenditure frameworks, etc.); and to assist countries to improve public sector management and governance (providing support for the decentralization process, annual public expenditure reviews [PERs] and public expenditures tracking surveys). Important opportunities have been missed: analyses of PRSPs and interim PRSPs from 27 countries in sub-Saharan Africa showed that inclusion of malaria in these frameworks is generally low. As a result, malaria is apparently not an important part of the dialogue. Integration will ensure that the Booster Program does not become a substitute for government financing of malaria control activities, but rather creates the incentive for long term sustainability.

5.0 MONITORING PROGRESS IN THE AFRICA REGION

Leadership, Staffing requirements, and the Organization of M&E

To ensure that the Africa Booster Program has a strong results focus, it is imperative that the Program provide support for strengthening M&E mechanisms at the country level, at the regional level, and within the Bank. Considering that the Program is complex, it requires a monitoring and evaluation system that is comprehensive in scope, taking into consideration implementation capacity issues which invariably influence overall program delivery, outcomes, and impact.

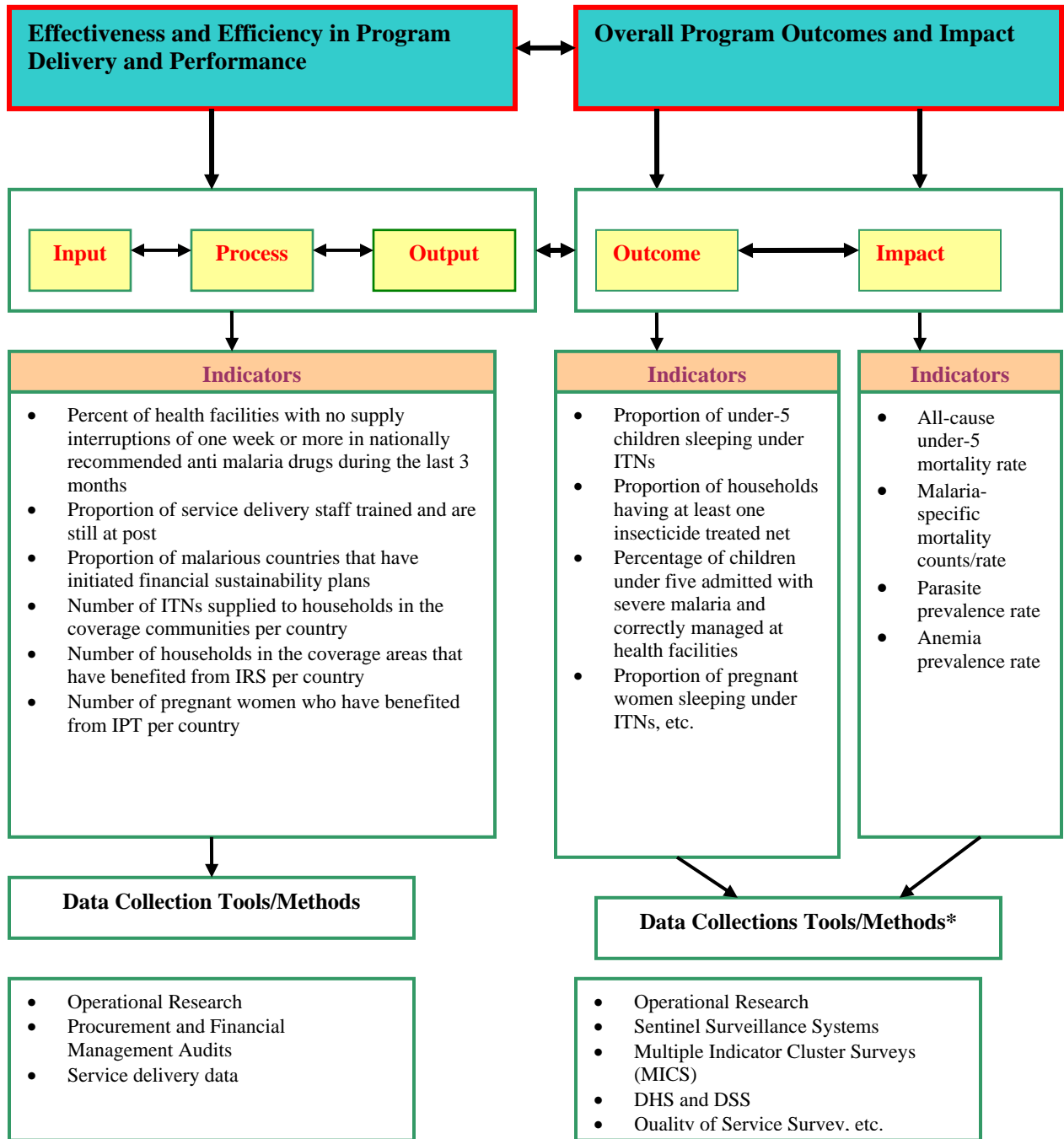
5.1 National Level

The M&E Framework is adapted from a conceptual framework developed by the Roll Back Malaria Monitoring and Evaluation Reference Group, also known as the MERG.³¹ The underlying assumption of the framework is that the program outcomes depend on effective and efficient delivery of services and/or effective and efficient implementation of the key tools and strategies for combating malaria. Without proper application of the main tools for combating malaria, namely support for insecticide-treated nets (ITNs), indoor residual spraying (IRS), intermittent preventive treatment during pregnancy (IPT), prompt and effective case management, in particular with Artemisinin-based combination therapy (ACT), and effective environmental management practices, it may be difficult to assess the Program's overall outcomes and impact.

Therefore the Results Framework of the Booster Program is influenced by the fundamental principle that, as depicted in Figure 7 below, the effectiveness of the Program's outcome and impact depends on the effectiveness and efficiency in program delivery and performance. The Program's results framework is designed to track input, process, output, outcome and impact indicators, using existing institutional arrangements for data collation, analysis, and reporting. To facilitate national, sub-regional and regional comparisons, common templates and questionnaires will be designed for data collection and collation, and analysis and reporting. In summary, at the country level the MERG has defined the core program indicators to monitor malaria programs. For ease of use, technical soundness and comparability, these indicators would be used by country counterparts and the Bank's task teams in the Booster Program, with adaptation to each context. The indicators are summarized in the figure below, and more will be added in the future (on capacity, availability of drugs, etc.).

³¹ See "Building Capacity in Monitoring and Evaluating Roll Back Malaria in Africa" MERG, January 2005.

Figure 7 Monitoring Progress



* details provided in Annex 7

5.2 Regional Level

At the regional level, the Booster Program, through its support to the Policy, Planning, Monitoring and Evaluation project (see Part II, section 1.4.2), will provide strong and sustained support for assessing and strengthening M&E systems. In this context, standardized templates specifically tailored to track data related to core indicators of the Program will be developed. As stated above, the sub-regional RBM networks will be heavily involved in these efforts and will interact with appointed focal M&E persons within national country programs to oversee the data collection, analysis and reporting.

5.3 Within the Bank

Within the Bank, mechanisms to monitor progress and to evaluate activities under the Booster will include:

- (a) The selection of process indicators that show activities accomplished, reveal resources available for TTLs and show disbursements made under the program, and an early warning system to flag problems needing immediate attention.
- (b) The elaboration of quarterly and annual reports to inform management of progress made and outstanding issues and to correct emerging problems rapidly.
- (c) The establishment of a tracking system to follow the flow of funds channeled to malaria by the Bank.
- (d) Liaising with partners and governments to ensure the strength of the M&E system. Finally, a quarterly bulletin will be published to inform management, staff, partners, and the media of the Program's progress.

6.0 MANAGING THE BOOSTER PROGRAM IN THE AFRICA REGION OF THE WORLD BANK

Effective malaria control is not a trivial matter, and requires both technical and organizational expertise. Most control measures are human-resource intensive and staff support is essential. Even in Asia and Latin America control programs are partially dependent on international experts. One of the key lessons learned from previous experiences in supporting malaria control is that a solid human resource base in the Bank is necessary to provide support to the countries. So far, the Bank has relied mainly on secondees who cannot by themselves meet the heavy demands from TTLs. The Africa Region is strongly committed to fixing this situation. Senior management is very much aware of the fact that this is a *sine qua non* for the ambitious and rapid scale-up of malaria control activities as planned in the Booster Program. To this end, the Bank is building a MIRT to take on three primary tasks. First the MIRT will assist country directors and TTLs in the complex tasks of developing booster programs that complement other donors' contributions. Second, the team will ensure proper coordination between different Bank instruments in the same country. Third, the MIRT will oversee the implementation and

monitoring of the Booster Program, ensure alignment with existing RBM country strategies and will liaise with the Bank's senior management and external partners. Partners have repeatedly stressed the need for the Bank to establish and maintain such team during the full ten years of the Booster Program and view the existence of this team as a sign of the Bank's strong commitment to addressing malaria control in the Africa Region.

A regional multi-sectoral group will also be constituted in the Africa Region, to assist the resource team coordinating the different sectors likely to be involved.

Within the Bank a communication team that encompasses competence in all areas described under communication strategies will provide support to the countries and will interface with the regional malaria resource team as well as with the individual country teams. The role of Africa Region Partnerships and External Affairs (AFREX) will be crucial in spearheading this effort.

ANNEXES

FRAMEWORK PAPER FOR ACTION BOOSTER PROGRAM FOR MALARIA CONTROL IN THE AFRICA REGION: SCALING UP FOR IMPACT (SUFI)

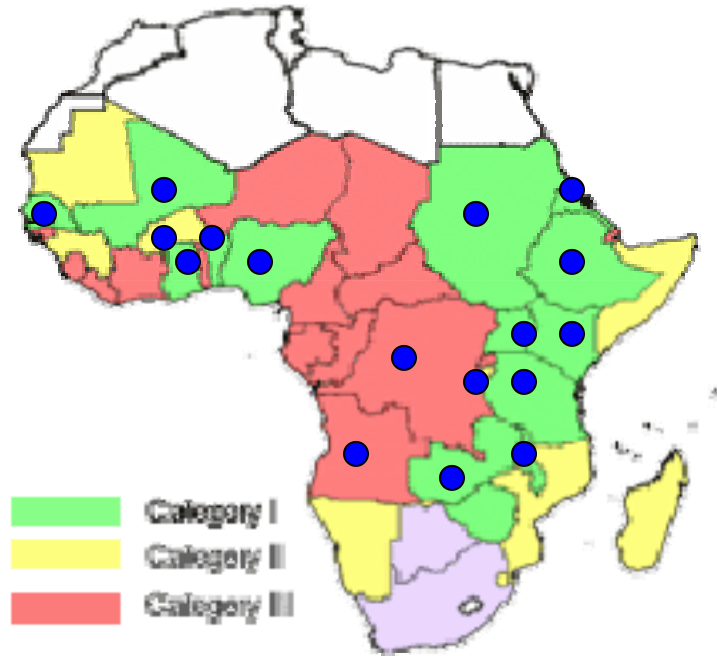
ANNEX 1: FACT SHEET: BOOSTER PROGRAM FOR MALARIA CONTROL IN THE AFRICA REGION

- On April 25 (Africa Malaria Day) this year, the Bank Group recommitted itself to worldwide malaria control and launched a Global Strategy and Booster Program. The Bank's Africa Region has translated this Strategy into an action plan that mounts an outcomes-driven assault on malaria across Africa.
- The Booster program is a renewed and determined effort from the Bank, in collaboration with its partners to close the gap between what can be done to "Roll Back" Malaria and what is actually being done to control this preventable and curable disease. This effort will build on a revitalized Roll Back Malaria Global Partnership and complement the efforts of other partners (countries, bilateral, and multilateral agencies, foundations, the private sector, individual donors and other) both at the country and regional levels in order to cross the critical threshold to bringing this scourge under control.
- During the intensive phase the Booster Program will benefit approximately 18 countries in the region (Nigeria, U.R. Tanzania, Uganda, Mali, Kenya, Zambia, Ghana, Senegal, Ethiopia, Sudan, Malawi, Benin, Eritrea, Rwanda, Burkina Faso, and Democratic Republic of Congo, Angola, Mozambique, Niger). These countries are selected based on burden of disease, readiness, and willingness to scale-up malaria control efforts. The list is meant to be indicative, with opportunities for entry and exit as appropriate.
- The Africa region has committed US\$500 million from IDA 14 funds for support of malaria control programs in these 17 countries. Funding will be within the country "envelopes".
- The Booster Program is strongly results-focused and supports the "Scaling-up for Impact (SUFI)" effort: an evidence based approach that focuses on impact and coverage measures. Therefore, this program is not just a commitment to increase assistance. It is about commitment to increased performance and accountability.
- It is important to emphasize that programs will not be implemented according to a "one size fits all" model. The Booster Program is flexible and provides a menu of options (preventive and treatment options) and instruments for countries to choose from to best suite their needs and help them reach the intended outcomes.
- The Booster Program has a country component and a regional component. It will strengthen both prevention and treatment of malaria.
- At the country level the program will principally support:
 - i)** human capacity development,
 - ii)** communication and behavior changes,
 - iii)** monitoring and evaluation strategies,
 - iv)** strengthening of health systems, and

- v) commodity and supply chain management
- At the regional level the program will principally support:
 - i) PPME technical assistance
 - ii) Operations research (OR)
 - Support for SUFI- relevant OR
 - Support for regional and sub-regional networks for drug efficacy monitoring
 - Support for regional or sub-regional insecticide efficacy monitoring
 - Support for regional and sub-regional training sites
 - iii) Regional procurement and supply chain management
 - iv) Cross border vector control programs
- The World Bank will assure that financial assistance flows within a country so that the World Bank-Ministry of Finance-Ministry of Health connectivity is seamless and assures that money needed is available in a timely way.

ANNEX 2: COUNTRY READINESS FOR RBM ACTION (MARCH 2003)

The 17 countries.³² selected for intervention in the intensive are indicated by blue dots in the map



Category 1: High burden, high readiness, GFATM funds

Benin, Ethiopia, Eritrea, Ghana, Malawi, Kenya, Mali, Nigeria, Senegal, Sudan, the United Republic of Tanzania, Uganda, Zimbabwe, Zambia

Category 2: High burden, limited readiness, GFATM funds

Burkina Faso, Burundi, Comoros, Guinea Conakry, Madagascar, Mauritania, Mozambique, Namibia, Somalia, Swaziland.

Category 3: Low readiness & Complex Emergency countries

Angola, Cameroon, the Central African Republic, Chad, the Republic of Congo, Côte d'Ivoire, Djibouti, Democratic Republic of Congo, Equatorial Guinea, Gabon, the Gambia, Guinea Bissau, Liberia, Niger, Rwanda, Sao Tome and Principe, Sierra Leone, Togo.

³² These categorization was done in 2003. Meantime it is likely that come of the countries may have moved from one category to another. Followi

ANNEX 3: EPIDEMIOLOGY OF MALARIA IN AFRICA

Climatic Conditions

Anomalies of rainfall and/or temperature are thought to be the most important causes of the epidemics in the African countries. Most of sub-Saharan Africa has stable endemic malaria. The climatic condition of the sub-Saharan region is optimal for flourishing of the most efficient vector mosquitoes in the world: *Anopheles gambiae*, *An. Funestus*, and *An. arabiensis*. More than half the population in this region is infected with *Plasmodium falciparum*, by far the most dangerous of the four parasite species that infect humans.

Behavioral Conditions

“Behavioral traits can also influence an individual's risk of developing malaria and, on a larger scale, the intensity of transmission in a population.

“Human behavior, often dictated by social and economic reasons, can influence the risk of malaria for individuals and communities. For example:

- Poor rural populations often cannot afford the housing and bed nets that would protect them from exposure to mosquitoes.
- These populations often lack the knowledge to recognize malaria and to treat it promptly and correctly. Often, cultural beliefs result in use of traditional, ineffective methods of treatment.
- Even when people know what to do, they often cannot do it because of financial reasons (no money to buy drugs) or physical impossibility (the nearest health post is a 3-day walk).
- Human activities can create breeding sites for larvae (standing water in irrigation ditches, burrow pits).
- Agricultural work such as harvesting (also influenced by climate) may force increased nighttime exposure to mosquito bites.

War, migrations (voluntary or forced) and tourism may expose non-immune individuals to an environment with high malaria transmission” (cdc.gov/malaria/distribution_epi/human_epidemiology.htm)

ANNEX 4: THE ROLE OF THE PRIVATE SECTOR AND THE INTERNATIONAL FINANCE CORPORATION

The role of the private sector will be critical if malaria is to be controlled. In most countries, malaria prevention and treatment is accessed most often through the informal and formal private sectors. The International Finance Corporate (IFC), which has a particularly strong comparative advantage in working with the private sector, will play an important role in this enhanced effort by the World Bank Group.

The private sector is essential for the supply of inputs such as drugs and ITNs needed for tackling malaria and their involvement in the distribution/sale, as well as in the delivery of related services. However, until now, the private sector has been reluctant to participate in many of these activities. The market for these needed goods is often unpredictable and difficult to forecast. Although needs are high, the ability of poor households to pay for these goods and services is limited. Current public financing arrangements are limited and not dependable, and even donor-supported aid offers only short-term predictability. The Booster Program for Africa could play an important role in stimulating wider involvement of the private sector by providing more certainty and stability to the market.

Three layers of for-profit private sector will be engaged through the Booster Program: (i) global providers for inputs such as ACTs and ITNs, (ii) international or local companies that employ large numbers of people in malarious affected countries, and (iii) health service providers, whether formal or informal. Each layer will have particular contributions to be extracted and needs to be fulfilled.

- Global providers need reliable forecasts. The Bank will have a regular dialogue to exchange information that has an impact on their forecasting. The new service based at the RBM Secretariat called Malaria Medicines and Supply Service aims to provide this function, but strengthened collaboration with the Bank's procurement specialists and the IFC is needed.
- Large companies operating at the country level could become allies in the fight against malaria, offering treatment to their employees, their families, and communities. There are analogies to the role this part of the private sector plays in the fight against HIV/AIDS and examples already exist relating to malaria. As part of its Chad-Cameroon Development Project, ExxonMobil protects Project workers and their families with a strong malaria prevention and treatment program.³³
- The informal health sector is the major supplier for malaria treatment in most countries. In the absence of adequate regulation and enforcement, what can be done to supply effective, good-quality medicines at prices affordable to the poor, through these informal channels? Issues such as pricing, financial incentives, distribution mechanisms, quality assurance, and counterfeiting come to mind.
- Educating and empowering consumers is an important aspect in this regard.

³³ ExxonMobil. Chad/Cameroon Development Project. "Fighting malaria in the workforce." Downloaded on November 15, 2004 at: www.exxonmobil.com/corporate/citizenship.

The IFC could potentially finance private companies involved in a number of different activities, such as manufacturing of drugs, nets and diagnostics, and drug distribution. To date the private sector has not sufficiently engaged in these activities to meet demand. There are several different roles the Bank could undertake with proposed financing that could facilitate involvement of the private sector. The draft business plan of the Roll Back Malaria Initiative for “Stimulating development, manufacturing and widespread distribution of long-lasting insecticidal nets” sets out a useful framework within which the private sector and potentially the IFC could engage. Several of these roles are more broadly applicable:

- *Advanced purchase contracts for drugs, nets, diagnostics, or other inputs with a medium-term duration (seven years or longer):* This would potentially give a manufacturer the incentive to invest, with the certainty of a guaranteed market.
- *Buy-downs of drugs, nets, diagnostics, and so forth:* This would close the gap between ability to pay and demand.
- *Grant funding to cover first loss or a Debt Service Reserve Account:* If IFC were to finance a local producer directly or through a financial intermediary, grant funding could potentially be used to cover a first loss or support a Debt Service Reserve Account.

For a private company, some activities that the Bank may support to increase the attractiveness of investment, and the market more generally, include:

- *Loan buy-downs or other mechanisms to lower the cost of capital.*
- *Improved transparency and streamlining of regulatory frameworks:* Currently these serve as a major barrier to entry in a number of countries. If these could be tackled it would certainly benefit a company’s bottom line and enhance the incentive to supply a given market.
- *Working to lower taxes and tariffs:* Again these may introduce unfair barriers that are a disincentive to market entry.

If some of the initiatives indicated above are undertaken and the right market conditions exist, the IFC could then undertake to do the following:

- Identify and finance private sector partners to fill these gaps.
- Use trust-fund money to identify manufacturers, distributors, and others essential to achieving overall goals.

There are also other potential products that the IFC could offer for smaller enterprises and NGOs where the transaction costs of doing business with the IFC would be too high; however these require further consideration:

- Support small manufacturers or distributors through a fund or line of credit.
- Support a local bank’s initiative in financing a small company with a guarantee from the IFC.
- Support small companies or NGOs through a new IFC grassroots initiative that offers support through a mixture of grants and small loans.

ANNEX 5: COMMODITY AND SUPPLY CHAIN MANAGEMENT

Introduction

Achieving the objectives of the Framework for action in the Africa Region for the Booster Program will require that extra attention be paid to supply chain management, which is critical for the success for a very commodity-driven program. This annex outlines the strategy for managing the supply chain management functions both in the short and long-term to achieve the expected outcome of increasing coverage of ITNs, IPT and anti-malarial drugs for both children and adults.

In the short-term the Booster Program will need to intensify the implementation of new interventions, while facing some major supply and system related challenges. These include a global shortage of the new effective drugs (ACTs) and long-lasting impregnated nets (LLINs); short shelf lives of ACTs; weak supply chain systems; long pipelines for distribution and lack of logistics information management system to drive the decisions of improved forecasting, procurement and inventory management. These bottlenecks, if not addressed early in the implementation phase could quickly bring the program to a halt.

In addition, the malaria program more than other programs will also require strong inter-sectoral coordination as some of the interventions such as spraying or re-treatment of ITNs may be managed by other ministries than Ministry of Health.

While the Bank will support, at the regional level, efforts to address the global shortages through the involvement of the private sector, in the immediate phase of program implementation, at the country level, strategic supply chain management decisions will need to be made to help in addressing the shortages and system weakness experienced by the program. From a supply chain perspective, the following issues and recommendations will be considered in the design and implementation of the program. A supply chain assessment would be a critical first step in determining the weaknesses and the strengths of the system.

Product Selection

There needs to be a clear policy that defines the products to be used by the countries. This policy needs to be widely disseminated in order to ensure that the health workers are aware and trained in the use of the new treatments regimes. Standard treatment guidelines may need to be updated. It is important that a list of products required by the program are clearly identified as other supply chain activities such as forecasting, procurement warehousing and even distribution depend on knowing the products the system will be managing. Due to the current global shortages, there may be two or three approved drugs or supplies for the management of malaria, however, countries should plan to limit the number of treatments and products available in the system, once manufacturers are able to meet the demands. Limiting the number of products a systems needs to manage will reduce the operational costs of the supply chain.

In selecting drug products, it is important for the ministry of health to be in communication with the drug regulatory agency of the country to determine the process of fast-tracking drug

registration or seeking a waiver for importing from a non-GMP (good manufacturing practices) certified manufacturer.

Forecasting

The malaria booster program faces several challenges in forecasting. First, the introduction of new products means that there is limited data available on the consumption patterns. Second, use of multiple therapies complicates the forecasting as it may be unclear whether substitution of one therapy over another is occurring due to lack of inventory. With the lack of data, many health programs including the malaria program rely on demographic and morbidity data to develop forecasts. These two types of forecasts are best used in triangulation with logistics forecasts to determine the best estimate of requirements.

It is important that one of the first steps taken is to implement a manual-based logistics information management system (LMIS) that captures basic logistics data such as consumption, stock-on-hand and losses and adjustments. This is even more important in the case of a couple of the malaria products where the demand exceeds the current production that any reliability in the demand requirements would assist manufacturers in managing their production cycles.

In the short-term, due to the global shortages of both ACTs and LLINs, it is important that accurate consumption-based forecasts are continually being communicated to the manufacturers to assist them in their production planning cycles. This type of exchange would benefit both the countries and the manufacturers in reducing demand uncertainty and thus reducing the cost of production and ultimately the cost to the consumer. The role of providing forecast data every six months directly to the supplier could be done by the countries themselves or through the RBM, if they are willing to take on this role.

Procurement

Determination of the procurement method to be used would be dependent on the number of suppliers, which in the case of the new products is limited and the timing required for implementing a procurement method versus the need to have the supplies in place for the implementation of the program. From a supply chain perspective, however, it is important to take factors such as lead-times, shelf-lives and specification of packaging that is consumer-friendly into account. It is important that countries consider establishing framework contracts with manufacturers with staggered quarterly delivery of supplies that can be adjusted depending on demand requirements. This type of procurement planning would ensure that vast amounts of stock do not have to be stored at the country level nor manufacturers forced to hold onto high levels of raw materials and inventory and also help in the global allocation of scarce supplies.

One of the key factors of ensuring effective procurement is to ensure that the information, finances and products flows are aligned. This is even more critical if the implementation of the malaria interventions are within a broader health package such as PRSC. Many of the countries, public sector budget planning and disbursement are conducted on an annual basis. However, for commodity management, there is a need for a multi-year commitment that enables 2 – 3 year planning horizons. In addition, in some countries, there are laws that determine the amount that can be disbursed on a quarterly basis. This results in programs having to procure less and frequently, resulting in higher prices or waiting till the end of year until the release of all funds is

complete before embarking on conducting the procurement. These disbursement issues need to be addressed prior to the start of the program.

Distribution

Countries may have to determine whether the products for the malaria program will be integrated in the existing distribution system or be vertically managed until the systemic weaknesses in the distribution are addressed. Many of the public sector supply chains operate on two or three tier systems, with normal delivery schedule of every three months to an intermediate storage facility and every month to the health facility. With the lead-time of six months for procurement, it could take a product an average of 10 months to reach the health facility where it can be dispensed to the consumer. This type of lengthy pipeline is risky for product expiry such as the new ACT which currently has a shelf-life of 24 months. Short of making the total supply chain more agile and efficient through the reduction of tiers, improving order processing cycles, the countries may consider a vertical distribution system in the short-term, while improving the overall supply chain management functions for all health commodities.

Warehousing of the malaria products brings several challenges: need for higher security of products such as ACT; bulkiness of the mosquito nests; cold or cool chain for the rapid diagnostic tests; and separate storage requirements for insecticides for re-impregnation of ITNs. For product integrity, it is important that storage requirements are not under-estimated. It is reasonable to consider payment of distribution, including warehouse and transport costs. If these functions are not well-funded, they will be managed sub-optimally with the risk of product expiry, pilferage, and or potential of the product becoming sub-standard.

In many of the public sector distribution systems, transport is one of the weakest links in the supply chain. While scheduled deliveries are a better approach because it ensures that the health workers are not spending inordinate time getting the products they need to service their patients, many systems practice an ad-hoc pick-up system, which puts the highest burden on the facility that has the least access to transport. This type of system also plays a major havoc on the inventory control system. The area of transport needs to be more strategically managed through the implementation of a scheduled delivery system or outsourcing of this activity to the private sector.

Inventory and order process management are critical functions for ensuring that the system is continually re-supplied. The malaria program needs to establish these processes as soon as the program starts. A procedures manual could serve as an important tool of ensuring that staff are informed of the procedures.

Monitoring

Monitoring of the commodities is an absolute key in ensuring continuous availability of supplies. The malaria program needs to incorporate monitoring stock-out rates at the health facilities as an indicator that needs to be reported to the highest level and used for making strategic decision on how best to operate the supply chain operations. As the system matures, other logistics indicators such as forecasting accuracy, on-time delivery receipt, order cycle time and inventory carrying costs and service waiting time can be incorporated that result ultimately in improved logistics operations and customer service.

ANNEX 6: COMMUNICATION STRATEGIES FOR BOOSTER PROGRAM IN THE AFRICA REGION AND THE ROLE OF CIVIL SOCIETY ORGANIZATIONS

Rationale: Both strategies – prevention and treatment require a **behavior change**; distributing ITNs is one thing, but convincing the communities to use them properly is another, and it is this “convincing” part that NGOs and CSOs are best placed to play.

Why involve CSOs?

In regions where the reach of the government and access to public services is either limited or absent, civil society and community based organizations have a presence and provide information and services.

- CSOs have the comparative advantage in taking the lead in behavioral change efforts
- CSOs often have the confidence of the public.

While CSOs may have the experience and the expertise to implement the communication component of the Malaria Booster strategy, they may not have the capacity to implement on a large scale and therefore, prior to involving them in the booster program, it would be essential to do the following:

1. **Mapping exercise.** This will be an in depth capacity assessment of the CSO/NGO landscape, this should be done through a top-down (directly asking the CSOs/NGOs) and bottom-up approach (directly asking the communities about the CSOs/NGOs).

Top-down assessment will include:

What they do, who they work with, such as government (national, traditional, local), other CSOs (national, international, regional), community based organizations (CBOs), or directly with the public.

What are their channels of information on the activities of government and other CSOs/NGOs, and how and to whom do they transmit information on their own activities.

Is there a legal framework that facilitates or inhibits their work (formal or informal)?

Access to financial resources and from where are they receiving their funding.

Number of beneficiaries, target coverage by region.

Constraints to activities, such as qualified staff, security in the field and general working environment.

Absorptive capacity for additional service or program. If not, what will be required?

Bottom-up assessment will include:

Where do people go to have their basic service needs met (NGOs, government, CBOs)

Their experience with such services, are their needs met?

Is their source of service reliable?

Channels of information on events, activities, services. Is it radio, newspaper, market, grapevine?

Equity in services, is any group being excluded?

What do communities think in order to improve services?

2. **Contracts.** Clear guidelines for agreement between government and CSOs. This will include assignment of roles, regions and activities for the CSOs to ensure there is no duplication.
3. **Funds and funding mechanism.** Allocate funds for CSO led activities and establish flexible and simple financial and administrative procedures, cash flow and disbursement.
4. **Cost effectiveness.** Allocate a reasonable overhead cost percentage to ensure cost-effectiveness of the CSO led activities.
5. **Selection of CSOs.** Develop clear selection criteria and process for assessing CSOs and NGOs as implementers.
6. **Capacity building.** Based on the mapping exercise, develop a capacity building strategy, including allocation of budget and technical assistance.

ANNEX 7: MONITORING PROGRESS IN THE AFRICA REGION

Leadership, staffing requirement, and the organization of M&E

Data Collection Tools and Methods

The program will rely on time-tested instruments for data collection. In addition to using service provision data, efforts will be made to undertake periodic in country surveys, using standardized questionnaires and templates which will be developed in consultation with the MERG, sub regional networks and the M&E and MIS specialists of the ministries of health in the malarious countries. The program will recommend the use of the following surveys for collecting data on the incidence and treatment of malaria:

Demographic Surveillance Systems (DSS)

The instrument will be used in household surveys to monitor the coverage and effectiveness of ITNs in preventing malaria cases.

Demographic and Health Surveys (DHS)

This instrument is versatile because of the standardization of questionnaires with little variation in cross country comparisons. Whenever possible, existing DHS data will be used to provide baseline data to assess overall program outcomes and impacts.

The program will participate in future DHS to provide data on malaria prevention and treatment that relate to the core indicators.

For instance according to the MERG, “ the DHS are primary source of information on all-cause under-5 mortality rates obtained by the direct estimation technique--- it is also used to measure the prevalence of anemia by hemoglobin measurement in children under 5 years of age”³⁴

Multiple Indicator Cluster Surveys (MICS)

This instrument is appropriate for measuring indicators related to the use of ITNs and use of anti malaria drugs for the treatment of fever in children³⁵.

Malaria Indicator Surveys (MIS) will be used mainly to monitor coverage of ITNs and treatment of all-cause child mortality. The MIS is suitable for small-scale surveys.

Sentinel Surveillance Surveys

The program will take advantage of ongoing WHO program which attempts to monitor anti malaria drug efficacy through in-country sentinel surveys, using national and sub regional networks.³⁶

³⁴ MERG, Building Capacity in Monitoring and Evaluating Roll Back Malaria in Africa, p24

³⁵ Ibid p 25

³⁶ Ibid

Operational Research (OR)

To deal with major challenges that could potentially undermine the effective delivery and implementation of the program, the program intends to take a cue from the Malaria Control and Evaluation Partnership in Africa (MACEPA) in Zambia to support a series of operational research in the 17 malarious countries. The OR is aimed at identifying operational obstacles like compliance drug efficacy and safety, cost effectiveness, product acceptability, disease management practices and quality of care. Findings resulting from such studies will be used to improve program delivery.³⁷

Management Information System

The program will invest in strengthening existing Health Management Information System (HMIS) in the malarious countries by providing appropriate equipment, software as well as encouraging the design of standardized templates for data capture, storage and analysis.

The program intends to develop a monitoring and evaluation guide to facilitate data collection/collation, analysis and reporting. This should contribute to the collection of timely and appropriate data to influence decision-making and, above all, to improve program implementation and performance.

Capacity Strengthening

To ensure that the malarious countries have the requisite core competencies in M&E, the program will team up with other partners to strengthen capacity through existing national and sub regional networks.

Risks

Due to differences in M&E capacity in the 17 malarious countries, it could be quite a challenge to track data that will have any comparative value. More significantly, differences in implementation capacity could undermine the timely achievement of program outcomes. Under performing countries could frustrate the achievement of the stated targets and goals. The program intends to overcome these challenges through capacity strengthening and standardization of data collection instruments. Country and sub regional networks will be linked to facilitate exchange of information. M&E champions will be selected from existing country/sub regional malaria study networks to coordinate M&E related work. Development of the M&E guide should facilitate the collection of quality data.

Targets

Finally, the program intends to set firm targets against which the overall outcome and performance of the program will be measured. To facilitate target setting, a series of rapid in-country assessments will be undertaken to establish baseline values on the incidence, treatment, and efficacy of malaria treatment in the 17 malarious countries, prior to the implementation of the program.

³⁷ Caesar Mudondo et al Op cit.



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