

PRESIDENT'S MALARIA INITIATIVE

BENIN

Malaria Operational Plan (MOP)

FY 2008

TABLE OF CONTENTS

ABBREVIATIONS.....	4
EXECUTIVE SUMMARY.....	6
THE PRESIDENT’S MALARIA INITIATIVE.....	9
BACKGROUND.....	9
National Health System.....	11
MALARIA SITUATION IN BENIN.....	14
NATIONAL MALARIA CONTROL PLAN AND STRATEGY.....	16
CURRENT STATUS OF MALARIA INDICATORS.....	17
GOAL AND TARGETS OF THE PRESIDENT’S MALARIA INITIATIVE.....	17
EXPECTED RESULTS – YEAR ONE.....	18
INTERVENTIONS – PREVENTION.....	18
Insecticide-Treated Nets (ITNs).....	18
Indoor Residual Spraying (IRS).....	22
Intermittent Preventive Treatment (IPTp).....	25
INTERVENTIONS – CASE MANAGEMENT (Diagnosis and Treatment).....	27
HIV/AIDS AND MALARIA.....	32
CAPACITY BUILDING WITHIN NATIONAL MALARIA CONTROL PROGRAM.....	32
COMMUNICATION AND COORDINATION.....	34
PRIVATE SECTOR PARTNERSHIPS.....	35
MONITORING AND EVALUATION PLAN.....	35
STAFFING AND ADMINISTRATION.....	37
ANNEXES.....	38

Annex 1: Tables

Table–1 - Timeline of Activities

Table 2 – Planned Obligations

Table 3 – Assumptions and estimated Year 1 coverage levels

Table 4 – Budget Breakdown by Intervention

Table 5 – Budget Breakdown by Partner

Annex 2: Multi-Year Country Strategy and Plan

ABBREVIATIONS

ACT	Artemisinin-based combination therapy
AL	Artemether-lumefantrine
ANC	Antenatal care
BASICS	Basic Support for Institutionalizing Child Survival
BCC	Behavior change communication
CCM	Country Coordinating Mechanism
CDC	Centers for Disease Control and Prevention
FCFA	<i>Franc de la Communauté financière d'Afrique</i> (Franc from the Financial Community of Africa)
CHW	Community health worker
CREC	<i>Centre de Recherche Entomologique de Cotonou</i> (Center for Entomology Research – Cotonou)
DDT	Dichlorodiphenyltrichloroethane
DHS	Demographic and Health Survey
EPI	Expanded Program on Immunization
FBO	Faith-based organization
FY	Fiscal Year
GFATM	The Global Fund to Fight AIDS, Tuberculosis, and Malaria
GOB	Government of Benin <i>Système National d'Information et de Gestion Sanitaires</i> (Health Management Information System)
HMIS	
IEC	Information, education, communication
IMCI	Integrated Management of Childhood Illnesses
IPTp	Intermittent preventive treatment of pregnant women
IRD	<i>Institut de Recherche pour le Développement</i> (Institute for Research and Development)
IRS	Indoor residual spraying
ITN	Insecticide-treated bed net
LLIN	Long-lasting insecticide-treated bed net
LQAS	Lot quality assurance sampling
M&E	Monitoring and evaluation
MCH	Maternal and child health
MIP	Malaria in pregnancy
MIS	Malaria Indicator Survey
MOH	Ministry of Health
NGO	Non-governmental organization
NMCP	<i>Programme National de Lutte contre le Paludisme</i> (National Malaria Control Program)
PISAF	<i>Projet Intégré de Santé Familiale</i> (Integrated Family Health Project)
PLWHA	People living with HIV/AIDS
PMI	President's Malaria Initiative
PMTCT	Prevention of mother-to-child transmission
PSI	Population Services International

RBM	Roll Back Malaria
RDT	Rapid diagnostic test
RTI	Research Triangle Institute
SP	Sulfadoxine-pyrimethamine
SPS	Strengthening Pharmaceutical Systems Program
UNICEF	United Nations Children's Fund
URC	University Research Corporation
USAID	United States Agency for International Development
USG	United States Government
WB	World Bank
WHO	World Health Organization

EXECUTIVE SUMMARY

In December 2006, Benin was selected as one of eight countries to receive funding during the third year of the President's Malaria Initiative (PMI). The objective of this Initiative is to assist African countries, in collaboration with other partners, to rapidly scale up coverage of vulnerable groups with four highly effective interventions: artemisinin-based combination therapy (ACT), intermittent preventive treatment for malaria in pregnancy (IPTp), insecticide-treated mosquito nets (ITN), and indoor residual spraying with insecticides (IRS).

Malaria is endemic nationwide and is a major cause of morbidity and mortality in Benin. It is reported to account for 41% of outpatient consultations, 29% of hospital admissions, and about 28% of deaths of children under five. With about 30% of the population living below the poverty line and a per capita income of only \$530, malaria places an enormous economic strain on Benin's development. Households in Benin spend approximately 24% of their annual income on the treatment and prevention of malaria.

The Government of Benin (GOB) views malaria control as a top priority for the development of the country and has a strong National Malaria Control Program (NMCP). The NMCP has developed a five-year strategic plan (2006-2010) that builds on recent changes in the national malaria policy to include long-lasting ITNs (LLINs), rapid diagnostic tests (RDTs), ACTs, and sulfadoxine-pyrimethamine (SP) for IPTp. The overall goal of the GOB is to reduce malaria morbidity and mortality by 50% by the year 2010.

Benin is currently in Phase II of a \$2.15 million grant from the Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM), which ends in September 2008. In 2007, the GOB received a 4-year, \$31 million World Bank (WB) Booster Program grant, which, together with the GFATM grant, covers many of Benin's commodity needs, particularly for ACTs and LLINs. With these sources of financing and support from the World Health Organization (WHO), the United Nations Children's Emergency Fund (UNICEF), and other national and international partners, a scaling-up of malaria prevention and control interventions has already started and considerable progress has been made. The activities and commodities to be funded in PMI's Year 1 Operational Plan for Benin are complementary to the existing malaria control activities and directly support the NMCP's strategic plan. To achieve the targets of PMI in Benin, the following major activities are proposed for the \$14 million funding for Year 1.

Insecticide-treated nets: Coverage with ITNs in Benin is low among high risk populations with only 24% of households owning at least one ITN. Use of ITNs is at about 20% nationally for pregnant women and children under five years. The NMCP's Five-Year Strategic Plan 2006 – 2010 supports a segmented market approach with the distribution of LLINs through the public sector via national campaigns, routine ANC (antenatal care) visits, and to infants completing routine vaccination. A national campaign is planned for September 2007 that will distribute over 1,500,000 free LLINs to families with children under five. PMI will procure 600,000 LLINs for distribution at health facilities to pregnant women attending ANC visits and to children on completion of their routine vaccinations. These nets will be distributed at a subsidized price to pregnant women as part of an ANC kit and for free to children attending vaccination clinics. Together with LLINs purchased with WB Malaria Booster Program

funds, PMI procurements should fill all needs for routine delivery of LLINs in 2008. PMI will also support strengthening of systems to deliver LLINs and health education activities to raise awareness about the importance of sleeping under an ITN, the value of an ITN, and correct and consistent use of ITNs among pregnant women and under-fives. PMI will support social marketing and community-based distribution of highly-subsidized LLINs through non-governmental organizations (NGOs) and/or faith-based organizations (FBOs) and community health workers to increase ITN coverage among vulnerable populations missed by other strategies (and older children as well as non-pregnant adults).

Indoor residual spraying: Although Benin has limited experience with IRS, the NMCP recognizes its value, particularly where ITN coverage is low. PMI will support IRS covering a population of about 350,000 in three communes in the first year, with the potential to expand the program based on positive outcomes. PMI will also support training to strengthen the Ministry of Health's (MOH) entomological capacity including strengthening the national insecticide resistance surveillance program.

Intermittent preventive treatment of pregnant women: Antenatal clinic attendance is high in Benin with 88% of women making at least one ANC visit. Benin adopted IPTp as a national policy in late 2004 but roll out has occurred in only approximately one-third of all health zones. Even in those health zones, implementation in health facilities has been irregular and stock-outs of SP are common. In Year 1, PMI will work with the MOH to achieve national coverage with an integrated package of antenatal interventions. This will include procurement of SP tablets (with FY 07 USAID/Benin funds), roll out of training and supervision of health workers in all health facilities, information, education, communication / behavior change communication (IEC/BCC) to increase early and frequent ANC visits and acceptance and proper administration of IPTp among pregnant women and health workers. PMI will strengthen pharmaceutical management to ensure that SP is available in all health facilities that offer antenatal care.

Case management: Benin adopted artemether-lumefantrine (AL, or Coartem®) as the first-line treatment for uncomplicated malaria in 2005. Under the NMCP's policy, any child under five years of age with a febrile illness should receive presumptive antimalarial treatment at a health facility or in the community. Due to a lack of funds, the new ACT policy has only been implemented in a small area through a GFATM-supported pilot project in health facilities and at the community level via community health workers. With assistance from the WB Booster Program and USAID, the NMCP plans to scale up the AL policy in 2007 to all public health facilities. In 2008, the NMCP plans to extend AL implementation to the roughly 25% of communities with the lowest access to facilities, and perhaps also to licensed private health facilities. During Year 1, PMI will support a comprehensive effort to improve malaria case management that will include strengthening diagnostic capabilities, including the introduction of RDTs to the most peripheral health facilities (*Centre de Santé Arrondissement*). In coordination with the WB Booster Program, PMI will support quality assurance for diagnostics at all levels and to promote case management based on diagnostic tests. PMI purchases of RDTs and ACTs in Year 1 will complement those of the WB Booster Program to fill all anticipated needs for these commodities. Community-based distribution of ACTs through NGOs/FBOs will be supported in one-sixth of the country (2 departments).

PMI will also support IEC interventions focused on the need for recognition of severe illness, prompt treatment of children under five together with efforts to improve forecasting, storage and delivery of RDTs and ACTs. PMI will support procurement of artesunate suppositories and other drugs for severe malaria and training in their use at peripheral and referral health facilities.

Monitoring and evaluation: The PMI includes a strong monitoring and evaluation component to measure progress against the project goal and targets and identify and correct problems in program implementation. The PMI monitoring and evaluation plan will be coordinated with the NMCP, the World Bank, and other partners to ensure that critical gaps are being filled and data collection and reporting are standardized. In the first year, PMI will provide support to strengthen the health information management system, support existing sentinel surveillance sites, collect data on process indicators, and build the overall monitoring and evaluation capacity of the NMCP.

Building NMCP capacity: Benin's NMCP staff are overstretched and in need of additional training at central, departmental, and health zone level. To reach NMCP targets for coverage with the major interventions, the PMI and other partners will support efforts to strengthen the capacity of the NMCP at all levels to plan, conduct, supervise, monitor and evaluate malaria prevention and control activities.

The proposed fiscal year (FY) 2008 PMI budget for Benin is \$14 million. 50% of the budget is for procurement and distribution of LLINs, 26% for procurement of ACTs, drugs for severe malaria, and improved laboratory diagnosis of malaria, and 9% for IRS. Overall, 40% will be spent on commodities.

Jump Start: The PMI, in collaboration with NMCP and partners, will support the launch of IPTp to cover all health facilities nationwide in Year 1.

PRESIDENT'S MALARIA INITIATIVE

In June 2005, the United States Government (USG) announced a new five-year, \$1.2 billion Initiative to rapidly scale up malaria prevention and treatment interventions in high-burden countries in sub-Saharan Africa. The goal of the President's Malaria Initiative (PMI) is to reduce malaria-related mortality by 50% after three years of full implementation in each country. This will be achieved by reaching 85% coverage of the most vulnerable groups - children under five years of age, pregnant women, and people living with HIV/AIDS (PLWHA) - with proven preventive and therapeutic interventions, including artemisinin-based combination therapy (ACT), insecticide-treated mosquito nets (ITNs), intermittent preventive treatment for malaria in pregnancy (IPTp), and indoor residual spraying with insecticides (IRS).

The PMI began in three countries in 2006: Angola, Tanzania, and Uganda. In 2007, four countries were added: Malawi, Mozambique, Senegal, and Rwanda. In 2008, eight additional countries were named to reach a total of 15 countries covered under the PMI. Benin was one of the eight countries added in 2008. Funding began with \$30 million in fiscal year (FY) 2006 for the initial three countries, \$160 million in FY 2007, \$300 million in FY 2008, and will reach \$500 million in FY 2010.

In implementing PMI-supported activities in Benin, the USG is committed to working closely with the host government and within the existing national malaria control strategy and plans. Efforts will be coordinated with other national and international partners, including the World Health Organization (WHO), the United Nations Children's Fund (UNICEF), the Global Fund to Fight AIDS, Tuberculosis, and Malaria (GFATM), Roll Back Malaria (RBM), the World Bank (WB) Booster Program, and the non-governmental and private sectors, to ensure that investments are complementary and that RBM and Millennium Development Goals are achieved. Country assessment and planning visits for the PMI, as well as subsequent evaluations, will be highly consultative and held in collaboration with the National Malaria Control Program (NMCP) and other partners.

This document presents a detailed one-year implementation plan for the first year of the PMI in Benin. It briefly reviews the current status of malaria control and prevention policies and interventions, identifies challenges and unmet needs, and provides a description of planned Year One activities under the PMI. The plan was developed in close consultation with the *Programme National de Lutte Contre le Paludisme* (PNLP, National Malaria Control Program) and with participation of all national and international partners involved in malaria prevention and control in Benin. The total amount of PMI funding requested for Benin is \$14 million for FY 2008.

BACKGROUND

In 2005, Benin's population was estimated at 8.3 million of which about 20% is under 5 years old and 4% consists of pregnant women. In 2002, almost 30% of the population was living below the poverty line. In 2005, Benin ranked 161 out of 177 countries on the Human Development Index and has a per capita income of only \$530 USD. Life expectancy is 52 and

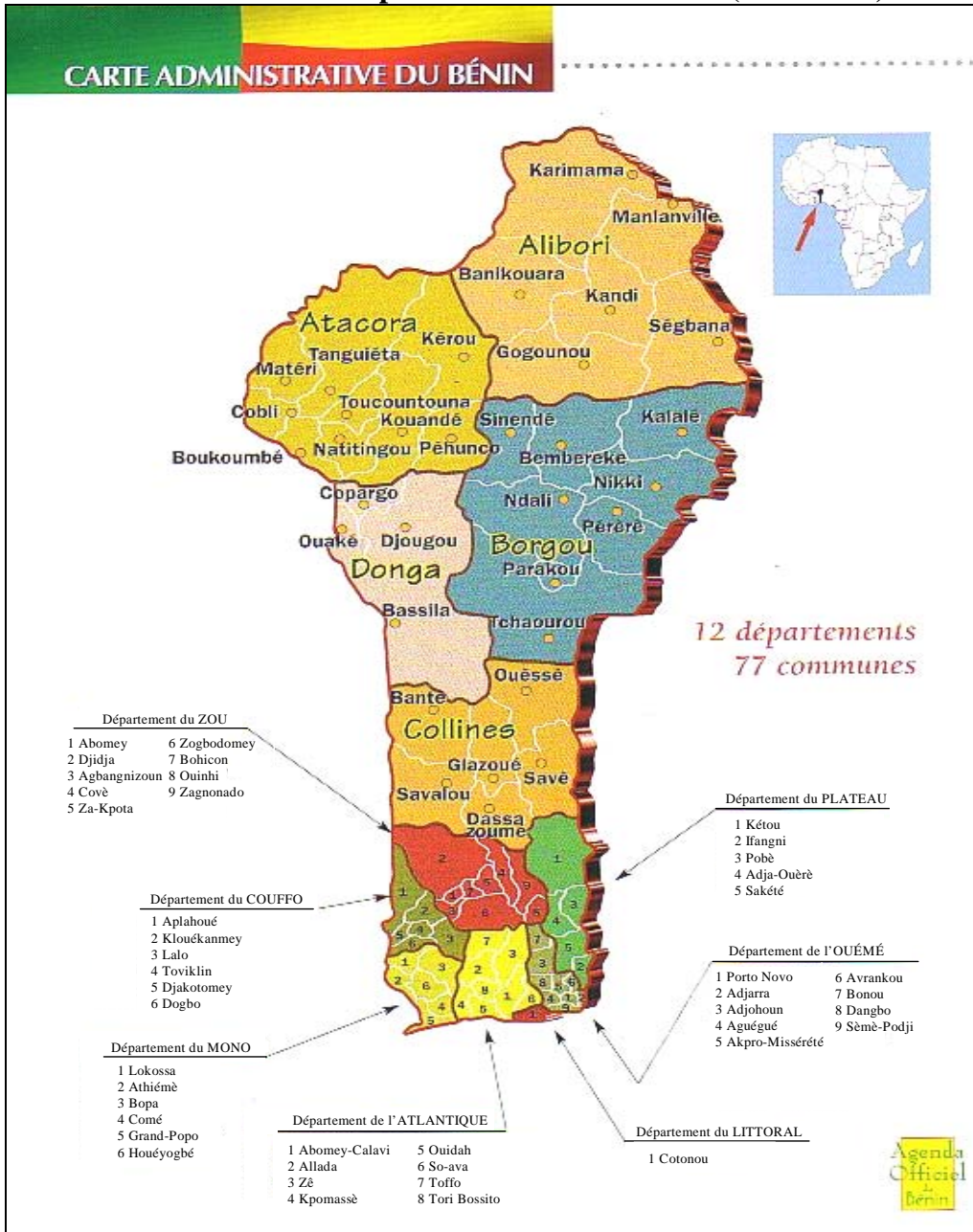
53 years of age for men and women, respectively. Educational levels are low – six in ten women and four in ten men have had no schooling. In 2004, the infant mortality rate was 90 per 1,000 live births, the under-five mortality rate was 152 per 1,000 live births, and the maternal mortality ratio was 850 per 100,000 live births. Total fertility rate is 5.7 per woman.

Benin spends 4.6% of its GDP on health. Households spend approximately 24% of their annual income on the treatment and prevention of malaria. In 2000, an epidemiological model estimated that 27% of deaths of children under five were attributable to malaria. Malaria is the number one reported cause for outpatient care and hospitalization of children under five.

Administratively, Benin is divided into 12 departments (average 600,000 inhabitants per department). In practice, however, the departments function as 6 pairs of “old” departments. Departments are subdivided into communes (1 to 9 communes per department), for a total of 74 communes and 3 autonomous urban areas (Cotonou, Porto Novo, Parakou) in the country. Communes are subdivided into a total of 546 *arrondissements* and 3,747 villages.

After many years of Marxist-Leninist rule and several coups, Benin is now widely considered a model democracy in Africa. Free and fair multiparty elections have been held for over a decade and, most recently, in March 2006 when Boni Yayi was elected President.

Benin's 12 administrative departments and 77 districts (*communes*)



National Health System

Benin's Ministry of Health underwent reorganization in 2005. This reorganization expanded the number of directorates, allowing for an additional and special focus on hospitals and health zones. Benin's public health system is organized as a pyramid which consists of three levels:

- **Central:** Ministry of Health and its central Directorates; National Referral Hospital (*Centre National Hospitalier et Universitaire; CNHU*)

- **Intermediate:** Departmental Directorates for Health, Departmental referral hospitals (*Centre Hospitalier Départemental*; CHD). Functionally, there are only 6 - i.e. one per “old” department.
- **Peripheral:** Health zones which contain the following health facilities: Zonal referral hospital (*Hôpital De Zone*; HZ), Commune Health Centers (*Centre de Santé de Commune*; CSC), Arrondissement Health Centers (*Centre de Santé d’Arrondissement*; CSA), private health facilities, and village health units. In practice, not all health zones have a functioning zonal referral hospital.

The country has been divided into 34 health zones, each covering an average population of 210,000 (range from 110,000 to 410,000). Health zone borders do not necessarily correspond to the administrative divisions of the country (the commune), because many of those were too small to justify construction of a referral hospital. Health zones contain from 1 to 4 communes (average of 2 communes per health zone).

The health zone concept is designed to—

1. ensure access to care and guarantee quality of basic and first referral level care
2. ensure rational and efficient management of available resources
3. contribute to the process of decentralization
4. reinforce community participation
5. develop a partnership between the public and private sectors

The first level of facility-based health care in the public sector starts with the Arrondissement Health Center which typically includes a dispensary (for curative care) and a maternity (for ANC and deliveries) and which is usually staffed by a nurse, a midwife, and some auxiliary staff. The Commune Health Center is usually staffed by a doctor, several nurses, and midwives and offers a wider range of health care services. Community Health Workers (*Relais Communautaires*) are present at the village level and are formally linked to health centers (either AHC or CHC). These CHWs are volunteers. It was not possible for the team to determine how many CHWs are currently working in Benin. The zonal hospital is the first referral level of specialist care. The ZH is usually staffed by a pediatrician, a surgeon, and an obstetrician-gynecologist. Within a health zone, there are private clinics and doctor’s offices, pharmacies, etc. These can be for profit or not for profit. The health zone is responsible for overseeing the whole range of providers (public and private) operating in the zone and planning for the best use of resources within the zone to achieve health objectives. Above the health zones are two additional layers of referral care—the Departmental Hospital Center and the Central Hospital. The implementation of health zones is still incomplete and quite a few are not yet functional.

In 2005 (SNIGS, 2005), there were an estimated 323 physicians, 1,972 nurses, 827 midwives, and 303 laboratory technicians working in Benin’s public health system. For the country as a whole, there are an estimated 425 Arrondissement Health Centers, 75 Commune Health Centers, and 305 private health facilities (SNIGS, 2005).

Private health providers

The private health sector in Benin is varied and includes traditional practitioners, private hospitals run by faith-based organizations, private facilities run by licensed health practitioners, unregulated providers, and drug vendors. The NMCP has acknowledged the important role of the private sector and it is generally agreed that a significant proportion of the population seeks care from the private health sector. From the NMCP's point of view, the private sector falls into 2 categories: authorized (licensed private pharmacies and health facilities, including faith-based facilities) and unauthorized (drug vendors and unlicensed health facilities). The NMCP can work with the former, but not the latter. This is a potential obstacle, as the unauthorized private sector is likely to be an important source of care for the poor.

Health system financing

Benin's income level is low, its work force is employed mostly in the informal sector, adult illiteracy is low, and an estimated 1.5 million people are extremely poor (roughly 20% of the population). Those factors suggest that national revenue collection is likely to be severely constrained. The government invests about 8% of total public spending in the health sector (average for Sub-Saharan Africa is 9%). The Ministry of Health has a mechanism in place to identify the poorest in the country and to subsidize their user fees through the recently established Indigent Fund. Although the system is in place, it appears that many people do not know that they are eligible. Households are by far the largest source and agent of health spending in Benin. Private out-of-pocket spending makes up 51.2% of total spending. Households are followed as a source of health funds by the government (at 31%) and donors (at 16.5%).

Public health facilities charge direct fees at the time of service for consultations, procedures, and medicines. These fees are kept at the facility level. A *carnet de santé* (health book that acts as a patient chart) must also be purchased to access care at public health facilities. The facility staff members work together with community committees to allocate user fees according to rules that are set by the MOH. Community financing represents a substantial share (average 43%) of local operating costs for the MOH facilities.

In December 2006, Benin's President announced that all health care costs at public health facilities would be abolished for children under five and pregnant women, including the costs for the *carnet de santé*, consultation fee, procedures (e.g. lab tests), and medicines. At the time of the team's visit, discussions with the MOH confirmed that the abolition of user fees would occur and that a decision on how this policy will be implemented is expected soon. Because utilization of public health facilities is relatively low, the removal of user fees could dramatically increase access for those who were unable to afford them in the past. However, it is still unclear how health facilities will be able to function if these revenues are not replaced from another source. It is also unclear whether increased demand for services might negatively impact the quality of care.

MALARIA SITUATION

Epidemiology

Malaria is a leading cause of morbidity and mortality among children under five in Benin. Based on the national health and management information system (HMIS or *Système National d'Information et de Gestion Sanitaires* [SNIGS]), in 2005, about 900,000 malaria cases and 1,581 malaria deaths (all ages) were reported (personal communication, M. Okê, NMCP). These data, however, seriously underestimate true malaria cases and deaths. RBM estimated that in 2004 there were about 3 million cases of malarial illness (all ages), and the WHO-convened Child Health Epidemiology Reference Group (CHERG) estimated that in the year 2000 about 10,000–13,000 malaria deaths occurred in children under five years of age. HMIS data also suggest a high burden of morbidity from anemia, much of which is likely caused by malaria. The 2006 Demographic and Health Survey (DHS) found that among children 6–59 months old, 78% had anemia (25% mild, 46% moderate, and 8% severe).

Entomology/transmission (populations at risk of malaria)

The malaria situation reflects the presence of vector breeding sites throughout the country and a seasonal rainfall pattern that increases the number of sites during the rainy season. Ubiquitous vector production in the presence of a large reservoir of gametocytes explains why malaria is endemic and transmission is stable everywhere. Transmission peaks in May during and after the rainy season. There are no epidemic-prone areas. The Mapping Malaria Risk in Africa (MARA) project estimates that 100% of population lives in areas with high intensity transmission. Entomological inoculation rates for *Anopheles gambiae s.l.* range from 11 to 58 infective bites/person/year, in the south. Most of these (75%) occur during the long rainy season.

The country can be divided into three climatic zones with somewhat different rainfall patterns: a southern region with higher annual rainfall (e.g., 1500 mm in Cotonou) and 4 seasons: long rainy (May – July), short dry (August – September), short rainy (October – November), and long dry (December – April); and two northern (east and west) regions with lower annual rainfall (1000–1200 mm) and no short rainy season. Many roads are impassable during the rains. Thus, community-level vector control activities, such as IRS, would need to occur toward the end of the long dry season (February – April).

Focusing on areas with high malaria prevalence in target groups, high entomological inoculation rates, high vector densities, and high infant mortality rates has led the NMCP to target areas in the south (Ouémé /Plateau, Mono/Couffo, Zou/Collines) and northeast (Natitingou) for IRS.

Twenty two *Anopheles* species have been collected in Benin. Of these, the major malaria vectors are: *An. gambiae sensu stricto (s.s.)* (M and S cytotypes), *An. arabiensis*, *An. funestus* and *An. melas* (coastal marsh areas). Minor vectors include: *An. nili*, *An. brochieri*, *An. flavicosta*, *An. paludis*, *An. pharoensis*, and *An. hargreavis*. These minor vectors may become important in certain circumstances or at certain times of the year. Depending on the species composition in a given area, NMCP recommendations for vector control might vary. For

example, presence of high numbers of *An. melas* might require some form of larval control since it is an outdoor biter that may not respond to long-lasting insecticide-treated nets (LLINs) and IRS. Such examples point out why the NMCP does vector surveillance for density, species composition, and resistance in areas targeted for IRS.

Vector pyrethroid insecticide resistance is well documented in Benin. Frequencies for the *ldr* pyrethroid resistance mechanism in vector populations range from 0% in the north to more than 75% in the southern and central parts of the country. It is not known how resistance affects the efficacy of LLINs and IRS (insecticidal effect) and their impact (malaria illness). It is also not known whether additional use of LLINs and IRS will result in higher levels of resistance.

Rationale for current allocation of control interventions

For malaria prevention, the NMCP plans to scale up LLINs via: a) a national campaign to distribute free LLINs in late 2007 to children under age five years, b) selling highly-subsidized LLINs to pregnant women at antenatal care (ANC) clinics, and c) distributing highly-subsidized or free (policy is pending) LLINs at vaccination clinics to children who complete their vaccination series (upon receiving measles vaccination, at about 9 months). The rationale for this 3-pronged approach is that: a) campaigns can rapidly increase LLIN ownership and use; b) a high proportion of pregnant women (88%) attend at least one ANC clinic; and c) a moderate proportion of children (47%) receive all vaccinations. LLIN distribution at ANC and vaccination clinics could provide an incentive to increase clinic attendance. IPTp has been adopted (although not yet widely implemented) because of concerns that the previous policy of chemoprophylaxis with weekly chloroquine is less likely to be effective because of chloroquine resistance and doubts about compliance. While the NMCP's 2006-2010 Strategic Plan recommends IRS, no spraying has been done in Benin for many years due to a lack of trained personnel and financial resources. For malaria treatment, the NMCP plans to scale up ACTs via public health facilities, licensed private health facilities, and community-based treatment with community health workers (CHWs). The rationale is that: a) despite relatively low use of public health facilities (37%), there are still about 900,000 cases of clinical malaria treated at public health facilities annually; b) licensed private health facilities are a significant source for malaria treatment; and c) community-based malaria treatment could reach those who do not visit health facilities.

Key partners in malaria control

Benin is the recipient of a \$2.15 million Round 3 grant from the GFATM, which is currently in Phase 2 and ends in September 2008. Africare is the Principal Recipient and is implementing this grant in three health zones of Mono-Couffo Department, an area of high malaria transmission. At present, Mono-Couffo is the only department in the country where artemether-lumefantrine (AL; Coartem®) is available in public health facilities. The goal of the project is to reduce malaria-related morbidity and mortality among pregnant women and children under five. The specific objectives of the grant are to: (1) improve use of ITNs among pregnant women and children under five; (2) improve case management of uncomplicated malaria in health facilities and home-based management of fever in under-fives; and (3) improve access to IPTp with SP for pregnant women. The grant supports community mobilization and participation, information, education, communication/behavior

change communication (IEC/BCC) approaches at the community level, and involvement of local stakeholders in malaria control.

The WB's main contribution to malaria control in Benin is through its Booster Program, a \$31 million 4-year malaria control grant to the Government of Benin (GOB) which includes significant support for the purchase of ACTs, rapid diagnostic tests (RDTs), SP, and LLINs (including a free LLIN distribution campaign targeting under-fives in late 2007), as well as funding for training of health workers, and support for monitoring and evaluation activities at the national level.

USAID/Benin supports a variety of malaria control activities, including the purchase of malaria commodities and technical assistance through the Mission's two integrated family health bilateral projects: Population Services International's (PSI) IMPACT project and University Research Corporation's (URC) PISAF project. These two projects support policy development and implementation, strengthening human resources through training and supervision, quality assurance and management.

Currently the WHO supports the NMCP to overcome difficulties in implementing the new national malaria control policy, build capacity in management and research, improve the monitoring and evaluation system and mobilize resources. UNICEF's main project is the Accelerated Child Survival and Development (ACSD) project, which primarily supports the implementation of Integrated Management of Childhood Illness (IMCI), ANC, and vaccinations, focused on 2 communes (in the departments of Plateau and Zou).

NATIONAL MALARIA CONTROL PLAN AND STRATEGY

Malaria is regarded as a high priority in Benin and the government is a signatory to RBM and the Abuja targets. The GOB is committed to allocating at least 6% of its national budget for the health sector. In 2006 and 2007, Benin spent approximately 5.8% of its health budget on malaria control. The GOB recently changed its national malaria policy to include LLINs, ACTs, and SP for IPTp. The new national policy was issued in November 2005 together with a five-year strategic plan for 2006-2010. The overall goal of the GOB is to reduce malaria morbidity and mortality by 50% by the year 2010 and to eliminate malaria as a public health problem by the year 2030. The specific objectives of the NMCP's new malaria policy are to:

- By 2010, ensure that 80% of malaria cases have been correctly managed at the household or community level within 24 hours of the onset of symptoms;
- By 2010, ensure that 80% of severe malaria cases have been correctly managed according to the national policy;
- By 2010, ensure that 80% of vulnerable groups (children under five and pregnant women) sleep under an insecticide-impregnated mosquito net;
- By 2010, ensure that 80% of pregnant women benefit from IPTp; and
- By 2010, ensure that 80% of communities have been informed regarding larval and environmental control measures.

CURRENT STATUS OF MALARIA INDICATORS

The table below presents recent estimates of malaria indicators from the preliminary report of the 2006 DHS. The 2006 DHS is a nationally representative household survey that was conducted from August 3 to November 18, 2006, which corresponds to a mix of high malaria transmission periods and somewhat lower transmission periods.

Recent Estimates of Malaria Indicators: 2006 Benin DHS (preliminary report)	
Indicator	Estimates
Proportion of households with at least one ITN	24.5%
Proportion of children under five years old who slept under an ITN the previous night	20.5%
Proportion of pregnant women who slept under an ITN the previous night	19.7%
Proportion of targeted houses adequately sprayed with a residual insecticide in the last 12 months (assume no IRS at baseline)	Not applicable (no IRS in many years)
Proportion of women who received ≥ 2 doses of IPTp during their last pregnancy in the last 2 years	Not yet available (final results pending, although 2.5% for pregnancies in past 5 years)
Proportion of children under five years old with fever in the last two weeks who received treatment with ACTs within 24 hours of onset of fever	Not yet available

GOAL AND TARGETS OF THE PRESIDENT'S MALARIA INITIATIVE

The goal of PMI is to reduce malaria-associated mortality by 50% compared to pre-Initiative levels in PMI countries. By the end of 2010, PMI will assist Benin to achieve the following targets in populations at risk for malaria:

- >90% of households with a pregnant woman and/or children under five will own at least one ITN;
- 85% of children under five will have slept under an ITN the previous night;
- 85% of pregnant women will have slept under an ITN the previous night;
- 85% of houses in geographic areas targeted for IRS will have been sprayed;
- 85% of pregnant women and children under five will have slept under an ITN the previous night or in a house that has been sprayed with IRS in the last 6 months;
- 85% of women who have completed a pregnancy in the last two years will have received two or more doses of IPTp during that pregnancy;
- 85% of government health facilities will have ACTs available for treatment of uncomplicated malaria; and
- 85% of children under five with suspected malaria will have received treatment with ACTs within 24 hours of onset of their symptoms.

Table 2

**President's Malaria Initiative – Benin
Planned Obligations for FY 2008 (USD \$14,000,000)**

Proposed Activity	Mechanism	Budget (<i>commodities</i>)	Geographic area	Description of activity	Page number reference
PREVENTIVE ACTIVITIES					
Insecticide-Treated Bednets					
Procure LLINs for routine services	DELIVER	4,200,000 (4,200,000)	Nationwide	Procure 600,000 LLINs for distribution via public and private ANC clinics and immunization clinics	P. 21
Strengthen storage capacity and distribute LLINs for routine services	DELIVER	261,000	Nationwide	Assess and upgrade storage capacity and ensure distribution	P. 21
Strengthen logistics management for LLINs, SP, ACTs, and severe malaria drugs	SPS Program	800,000	Nationwide	Training and technical assistance to the Central Medical Stores staff on forecasting, supply management, tracking, and improving commodity storage	P. 21
IEC/BCC for LLINs, IPTp, and ACTs	PSI	950,000	Nationwide	Support strategies to increase demand and utilization of LLINs, ACTs, and IPTp at all levels of the health system and technical assistance for NMCP in IEC/BCC	P. 22
Assess effect of insecticide resistance on impact and efficacy of ITNs and IRS	WHO (CREC)	300,000	South Benin TBD	Operations research to determine the effect of pyrethroid resistance on the impact and efficacy of ITN/IRS	P. 22

Proposed Activity	Mechanism	Budget (<i>commodities</i>)	Geographic area	Description of activity	Page number reference
Evaluation of new technology to determine when LLINs need to be replaced	CDC/WHO (CREC)	Core Funded	N/A	Operations research to evaluate a new technique to determine when LLINs need to be replaced.	P. 22
Community-based distribution of ACTs and LLINs with focused IEC/BCC support at the community level	Newly competed RFA	<i>Costs covered in Treatment section</i>	2 departments	NGO/FBO implementation of community-based distribution of ACTs and LLINs with community-based IEC/BCC strategies in all communes and all health facilities of 2 departments with low access to health services and high child mortality	P. 22
Private sector LLIN distribution	PSI	534,000 (400,000)	TBD	Procure and distribute approximately 60,000 highly-subsidized LLINs with social marketing to the general population in rural areas.	P. 22
SUBTOTAL: Insecticide-treated bednets		\$ 7,045,000 (\$ 4,600,000)			
Indoor Residual Spraying					
Train NMCP staff in entomology & vector control	URC	50,000	N/A	Short-term entomology/vector control training for MOH personnel.	P. 24
Entomological evaluation in IRS target areas	WHO (CREC)	27,500	IRS target areas	Entomological surveys before and after IRS.	P. 24
Support national vector resistance surveillance program	WHO (CREC)	80,000	Nationwide	Support for national malaria vector resistance surveillance program	P. 24

Proposed Activity	Mechanism	Budget (commodities)	Geographic area	Description of activity	Page number reference
IRS implementation	RTI	1,050,000 (350,000)	Several communes in South Benin	1 round of IRS in South Benin (houses: 70,000, population: 350,000), includes assessment, training personnel, equipment/insecticide procurement, sensitizing the community, etc.	P. 24
CDC technical assistance for vector control activities.	CDC	12,500	N/A	Technical assistance visit to monitor planning and implementation of vector control activities.	P. 25
SUBTOTAL: IRS		\$1,220,000 (\$350,000)			
Malaria in Pregnancy (IPTp)					
IEC/BCC for IPTp	PSI	<i>Costs covered in ITN section</i>	Nationwide	BCC strategies for targeting pregnant women to promote ANC attendance and IPTp. Includes training of community-based workers.	P. 26
Train and supervise health workers in IPTp	URC	230,000	Nationwide	Train, supervise health workers, including midwives, to deliver SP in ANC.	P. 27
Strengthen logistics management for SP	SPS Program	<i>Costs covered in ITN section</i>	Nationwide	Training and technical assistance to the Central Medical Stores staff on forecasting, supply management, tracking, and improving commodity storage.	P. 27
SUBTOTAL: Malaria in Pregnancy		\$230,000			
CASE MANAGEMENT ACTIVITIES					

Proposed Activity	Mechanism	Budget (<i>commodities</i>)	Geographic area	Description of activity	Page number reference
Diagnostics					
Procure microscopes and laboratory consumables	Diagnostics RFA	110,000 (110,000)	Nationwide	Procure 30 microscopes and repair/replacement parts for existing microscopes, reagents for microscopy in district and commune-level public facilities.	P. 29
Procure RDTs	DELIVER	50,000 (50,000)	Nationwide	Procure 64,000 RDTs.	P. 29
Train laboratory technicians	Diagnostics RFA	62,500	Nationwide	Train laboratory technicians in microscopy and RDT use at the commune and health zones levels in malaria diagnostics.	P. 29
Support quality assurance/quality control system for diagnostics	Diagnostics RFA	50,000	Nationwide	Support National Laboratory for Quality Control for quality control system for microscopy and RDTs in all facilities.	P. 29
CDC technical assistance on diagnostics	CDC	12,500	N/A	Technical assistance visit to help design the diagnostics quality control system.	P. 29
SUBTOTAL: Diagnostics		\$285,000 (\$160,000)			
Treatment					
Procure ACTs	DELIVER	82,000 (82,000)	Nationwide	Procure 39,000 ACT treatments (in addition to 1,092,000 treatments procured with FY 2007 funds) for distribution at facilities and CHWs.	P. 30
Procure artesunate suppositories	DELIVER	68,000 (68,000)	Nationwide	Procure 180,000 suppositories for pre-referral treatment of severe malaria cases.	P. 30

Proposed Activity	Mechanism	Budget (commodities)	Geographic area	Description of activity	Page number reference
Procure drug kits for inpatient treatment of severe malaria	DELIVER	400,000 (400,000)	Nationwide	Procure 50,000 quinine drug kits for inpatient treatment of severe malaria cases.	P. 30
Supervise and support health workers on case management	URC NMCP	500,000 100,000	Nationwide	Strengthen and implement a supervisory strategy, as part of a comprehensive quality assurance approach, to ensure high quality malaria case management with ACTs.	P. 30
Private sector case management	URC	200,000	Nationwide	Develop guidelines, train and promote activities targeting private health sector.	P. 30
Management of severe malaria	URC	175,000	Nationwide	Support training and supervision of health workers on appropriate management and referral practices for severe malaria.	P. 30
Support IMCI training	URC	170,000	Nationwide	Provide IMCI training for health workers	P. 30
Strengthen logistics management for ACTs and severe malaria drugs	SPS Program	<i>Costs covered in ITN section</i>	Nationwide	Training and technical assistance to the Central Medical Stores staff on forecasting, supply management, tracking, and improving commodity storage.	P. 31
Community-based distribution of ACTs and LLINs with focused IEC/BCC support at the community level	Newly competed RFA	950,000	2 departments	NGO/FBO implementation of community-based distribution of ACTs and LLINs with community-based IEC/BCC strategies in all communes and all health facilities of 2 departments with low access to health services and high child mortality	P. 31

Proposed Activity	Mechanism	Budget (<i>commodities</i>)	Geographic area	Description of activity	Page number reference
	BASICS	150,000	N/A	Technical assistance to NGO grantees of the newly competed request for applications, on community-based distribution of ACTS and LLINs.	P.31
Drug quality control	USP-DQI	150,000	Nationwide	Support the National Laboratory for Quality Control to improve malaria drug quality control	P. 31
Conduct health facility and hospital survey	TASC3	350,000	Nationwide	Conduct health facility and hospital survey focused on malaria case management and quality of ANC care.	P. 31
IEC/BCC for treatment	PSI	<i>Costs covered in ITN section</i>	Nationwide	Support broad communication strategy on dangers of malaria, and the need for prompt referral to health facilities for treatment.	P. 31
USAID/HQ technical assistance on community-based distribution of ACTs	USAID	10,000	N/A	Technical assistance visit in design of community-based distribution of ACTs.	P. 31
CDC technical assistance for supervisory systems	CDC	12,500	N/A	Technical assistance visit to develop scope of work for health worker performance supervisory system.	P. 31
SUBTOTAL: Treatment		\$ 3,317,500 (\$550,000)			
CAPACITY BUILDING WITHIN NATIONAL MALARIA CONTROL PROGRAM					
Capacity building of the NMCP	URC	160,000	N/A	Support training for 20 people (12 physicians at health zone level and 8 staff at department level) and 32 NMCP staff	P. 33

Proposed Activity	Mechanism	Budget (<i>commodities</i>)	Geographic area	Description of activity	Page number reference
Equipment for the NMCP	URC	150,000	N/A	Computers, internet access, photocopiers, printers, office renovation, etc. (central and departmental level)	P. 34
SUBTOTAL: Capacity building		\$ 310,000			
MONITORING AND EVALUATION					
Strengthen Benin's HMIS system and NMCP's M&E capacity	TASC3	150,000	Nationwide	Train and supervise health workers to ensure prompt and complete reporting to all levels, including comprehensive feedback system to encourage data for decision-making; provide computers and supplies. Support for NMCP/HMIS (central and departmental level).	P. 36
Strengthen sentinel sites	TASC3	150,000	Nationwide	Technical assistance to sites for collection of reliable data on inpatient malaria cases and deaths.	P. 36
Technical assistance on measuring process indicators	URC	50,000	N/A	Quarterly collection, analysis, and reporting of process indicators and "confounders".	P. 36
CDC technical assistance for M&E	CDC	12,500	N/A	Technical assistance visit to assist NMCP with M&E planning and implementation.	P. 37
SUBTOTAL: Monitoring and Evaluation		\$362,500			
IN-COUNTRY MANAGEMENT AND ADMINISTRATION					

Proposed Activity	Mechanism	Budget (<i>commodities</i>)	Geographic area	Description of activity	Page number reference
USAID and CDC staff and administrative expenses	USAID/CDC	950,000	N/A	Support for USAID PSC resident advisor, CDC direct hire resident advisor, includes travel for PMI retreat.	P. 32
FSN staff and other in-country administrative expenses	USAID	280,000	N/A	Support for USAID FSNs to work full time with PMI and to cover other administrative expenses related to PMI.	P. 32
SUBTOTAL: Management and Administration		\$1,230,000			
GRAND TOTAL		\$14,000,000 (\$5,660,000)	<i>Commodities represent 40% of total budget</i>		

Table 3

**Benin – Year 1 Targets
Assumptions and Estimated Year 1 Coverage Levels**

Year 1 PMI Expected Results:

Prevention:

- Approximately 660,000 LLINs will have been purchased and distributed through health facilities, community groups, and the commercial sector to children under five and pregnant women, bringing nationwide ownership of ITNs to about 50%;
- At least 85% of houses (approximately 59,500 houses with a population of 297,500) in geographic areas targeted for IRS during Year 1 will have been sprayed;
- Intermittent preventive treatment with SP in pregnant women (IPTp) will have been implemented in all 12 departments of the country.

Treatment:

- All laboratory technicians at the commune and health zone level will have been trained in malaria diagnostics;
- The National Laboratory for Quality Control will have been strengthened to implement an improved quality control system for malaria diagnostics, (including microscopy and use of RDTs), and improved inspection and testing of drugs (including ACTs);
- All departments will be using ACTs and approximately 1 million pediatric ACT treatments will have been purchased and distributed via government health facilities (nationwide) and through community-based workers (2 departments);
- Approximately 180,000 artesunate suppositories and 50,000 quinine drug kits for treatment of severe malaria will have been distributed to health facilities.

Assumptions:

Population of country (estimated): 8.3 million

Pregnant women:	4% of total population = 332,000 pregnant women
Infants (children <1):	3% of population = 249,000 infants
Children <5 years:	20% of population = 1,660,000 children under five
Older children (5–14 years):	28% of population = 2,324,000
Adults (≥15 years):	52% of population = 4,316,000

Average number of malaria-like illnesses per year and cost per treatment (costs given are for artemether-lumefantrine):

Children <5:	3.0 illnesses/year at \$0.50 each
Older children	1.0 illnesses/year at \$1.00 each
Adults	0.5 illnesses/year at \$1.50 each (assume that the PMI will cover only one-third of adult episodes)

Cost of a LLIN = \$7.00; average of 2.5 nets/household needed to cover all pregnant women and children under five in family

Cost of spraying a house with an average of 5-6 inhabitants = \$15.00

Intervention	Needs for 100% Nationwide Coverage over 3 Years	Needs for 85% Nationwide Coverage over 3 Years	Annual Needs to Achieve 100% Coverage	Needs to Achieve Year 1 PMI Targets	Year 1 Contributions
IPTp	332,000 pregnant women x 2 treatments/woman = 0.6 million treatments/year x 3 years = 1.8 million treatments	1.53 million SP treatments	0.6 million SP treatments	Target: 20 % of pregnant women receive 2 doses of IPTp = 132,800 doses (1 dose = 3 SP tablets)	<ul style="list-style-type: none"> • WB Booster will purchase 200,000 SP tablets • USAID will purchase 2.3 million SP tablets (using FY 2007 funds) • No gap
LLINs	1.66 million households x 2.5 nets/household = 4.15 million nets	3.5 million LLINs (or 1.2 million nets per year for 3 yrs)	1.4 million LLINs	Target: 40% of children under five and pregnant women sleep under an LLIN = 560,000 LLINs	<ul style="list-style-type: none"> • WB Booster will purchase 135,000 LLINs • USAID will purchase 150,000 LLINs (using FY 2007 funds) • USAID will purchase 660,000 LLINs • No gap (for LLINs distributed via routine ANC and vaccination clinics)

Intervention	Needs for 100% Nationwide Coverage over 3 Years	Needs for 85% Nationwide Coverage over 3 Years	Annual Needs to Achieve 100% Coverage	Needs to Achieve Year 1 PMI Targets	Year 1 Contributions
ACTs – children < 5	1.66 million children under five x 3.0 episodes/year = 5.0 million treatments/year x 3 years = 15 million	5 million x 85% = 4.25 million treatments x 3 yrs = 12.75 million	5 million treatments	Target: 20% of children under five receive ACTs = 1 million treatments	<ul style="list-style-type: none"> WB Booster will purchase about 1 million treatments for children <5 years and about 400,000 treatments for patients ≥5 years old USAID will purchase 1,079,000 treatments for children <5 years and 13,000 treatments for patients ≥5 years old (using FY 2007 funds). USAID will purchase 39,000 treatments for patients ≥5 years old No gap (for treatment in public health facilities for patients of all ages, and for treatment in 25% of communities for <5s)
ACTs – older children	2.32 million older children x 1.0 episode/year = 2,32 million treatments/year x 3 years = 6.96 million	2.32 million x 85% = 1.97 million tx x 3 years = 5.91 million	2.32 million treatments		
ACTs – adults	4.32 million adults x 0.5 episodes/year x 33% = 0.71 million treatments/year x 3 years = 2.13 million	0.71 million x 85% = 0.60 million tx x 3 yrs. = 1.8 million	0.71 million treatments		
TOTAL	24.1 million treatments	20.5 million treatments			
Drugs for severe malaria children <5	1.66 million children under five x 0.3 (i.e., 10%) severe episodes/year = 0.5 million treatments/year x 3 years = 1.5 million	1.5 million x 85% = 1.3 million	0.5 million treatments		<ul style="list-style-type: none"> WB Booster will purchase 17,000 inpatient treatment kits USAID will purchase 50,000 inpatient treatment kits (for 2008 and early 2009) and 180,000 artesunate suppositories for pre-referral treatment No gap for children < 5; a gap of 27,000 exists for older children and adults
Drugs for severe malaria older children	2.32 million older children x 0.1 (i.e., 10%) episodes/yr = 0.23 million treatments/year x 3 years = 0.69 million	0.69 million x 85% = 0.6 million	0.23 million treatments		

Inter-vention	Needs for 100% Nationwide Coverage over 3 Years	Needs for 85% Nationwide Coverage over 3 Years	Annual Needs to Achieve 100% Coverage	Needs to Achieve Year 1 PMI Targets	Year 1 Contributions
IRS	N/A	N/A	N/A	<p>Target: 85% of targeted houses to be sprayed =</p> <p>70,000 households x 85%, or 59,500 households to be sprayed</p>	<ul style="list-style-type: none"> • USAID will support all IRS • No gap (for the geographic area targeted)

Table 4

President's Malaria Initiative – Benin Year 1 (FY 2008) Budget Breakdown by Intervention (\$14,000,000)

Area	Commodities \$ (%)	Other \$ (%)	Total \$
Insecticide-treated Nets	\$4,600,000 (65%)	\$2,445,000 (35%)	\$7,045,000 (100%)
Indoor Residual Spraying	\$350,000 (29%)	\$870,000 (71%)	\$1,220,000 (100%)
Intermittent Preventive Treatment	\$0 (0%)	\$230,000 (100%)	\$230,000 (100%)
Case Management - Diagnostics	\$160,000 (56%)	125,000 (44%)	\$285,000 (100%)
Case Management - Treatment	\$550,000 (17%)	\$2,767,500 (83%)	\$3,317,500 (100%)
Capacity Building	\$0 (0%)	\$310,000 (100%)	\$310,000 (100%)
Monitoring and Evaluation	\$0 (0%)	\$362,500 (100%)	\$362,500 (100%)
Administration	\$0 (0%)	\$1,230,000 (100%)	\$1,230,000 (100%)
Total	\$5,660,000 (40%)	\$8,340,000 (60%)	\$14,000,000 (100%)

Table 2

Illustrative 3-Year Budget and Expected Coverage Levels for Benin

PMI Targets: After three years of full implementation, the PMI will achieve the following targets in Benin:

- i. 85% of children under five will have slept under an ITN the previous night;
- ii. 85% of pregnant women will have slept under an ITN the previous night;
- iii. 85% of pregnant women will have received two or more doses of SP for IPTp during their pregnancy;
- iv. 85% of houses targeted for indoor residual spraying will have been sprayed;
- v. 85% of children under five with suspected malaria will have received treatment with ACTs within 24 hours of the onset of their symptoms.

Assumptions:

Population of country (estimated): 8.3 million

Pregnant women:	4% of total population = 332,000 pregnant women
Infants (children <1):	3% of population = 249,000 infants
Children <5 years:	20% of population = 1,660,000 children under five
Older children (5–14 years):	28% of population = 2,324,000
Adults (≥15 years):	52% of population = 4,316,000

Average number of malaria-like illnesses per year and cost per treatment (costs given are for artemether-lumefantrine):

Children <5:	3.0 illnesses/year at \$0.50 each
Older children	1.0 illness/year at \$1.00 each
Adults	0.5 illnesses/year at \$1.50 each

100% of total population of Benin is at risk of malaria = 8.3 million

Cost of a LLIN = \$7.00; average of 2.5 nets/household needed to cover all pregnant women and children under five in family

Cost of spraying a house with an average of 5-6 inhabitants = \$15.00

Cost of IPTp with SP = \$0.20 (\$0.10 for each of the two treatments a woman will receive during her pregnancy)

Costs per person for implementation support are based on a detailed cost analysis prepared for Uganda.

Item/Activity	Annual Cost per Person	Annual Cost	3-Year Total	Assumptions/Comments
Prevention – insecticide-treated nets		\$8,715,000	\$26,145,000	8.3 million people at risk of malaria = 1,660,000 households x 2.5 nets/household x 90% coverage x \$7/net
Prevention – indoor residual spraying		\$2,082,500	\$6,247,500	Assumes IRS (one round per year) will target 70,000 households in Year 1, 140,000 households in Year 2, and 280,000 households in Year 3 (doubling the scale of IRS each year). Total 490,000 households x 85% coverage x \$15/household. Actual scale-up of IRS will be based on lessons learned and NMCP IRS plan developed in Year 1 of PMI.
Treatment – malarial illnesses		\$6,499,950	\$19,499,850	Assumes treatment of 85% of all malaria-like illnesses in under-fives, older children, and adults (see assumptions listed above).
Treatment – IPT for pregnant women		\$56,440	\$169,320	332,000 pregnant women x 3 years x 85% coverage x \$0.20 per year
Implementation Support	\$0.92	\$7,636,000	\$22,908,000	Commodity management, human resources, supervision, training, social mobilization, etc. (8.3 million population at risk of malaria x \$0.92 x 3 years)
Monitoring and Evaluation		\$2,000,000	\$6,000,000	There is currently no costed national M+E plan for Benin. Assume that the cost to implement the national M&E plan is an estimated \$2 million per year.
Cost of Program			\$80,969,670	

ISG Implementation Support Costs		\$1,230,000	\$3,690,000	Long-term expatriate advisors' salaries, benefits, travel; local staff; office supplies and equipment for PMI in-country office; TDY from CDC and USAID
Total funding needed (including USG program costs)			\$84,659,670	
Government of Benin malaria budget		\$1,250,000	\$3,750,000	Assumes that the GOB's annual malaria budget is constant over the period 2008-2010 and funding is at the same level as it was in 2005 and 2006 (625m FCFA).
WB Booster Program		\$10,333,333	\$31,000,000	GOB is the recipient of an International Development Assistance grant from the WB Booster Program which is \$31 million for 3 years (2008-2010).
Global Fund Round 3		\$0	\$0	The funds from Round 3 will have ended by September 2008; Note: Benin has submitted a Round 7 proposal.
Available funding from other sources			\$34,750,000	
PMI funds available (estimated):				Assumes PMI funding is divided between countries based roughly on their populations
Year 1		\$14,000,000		Assumes 15 PMI countries for all 3 years and an increase in PMI funding for Benin in Years 2 and 3
Year 2		\$16,000,000		
Year 3		\$17,000,000		
Years 1 through 3			\$47,000,000	
Total available funding			\$81,750,000	
Remaining Gap			\$2,909,670	3-year shortfall to meet total need