PREVENTION AND CONTROL OF MALARIA IN PREGNANCY IN THE AFRICAN REGION

A Program Implementation Guide

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Access to clinical and community maternal, neonatal and women's health services

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The ACCESS Program is the U.S. Agency for International Development's global program to improve maternal and newborn health. The ACCESS Program works to expand coverage, access and use of key maternal and newborn health services across a continuum of care from the household to the hospital—with the aim of making quality health services accessible as close to the home as possible. Jhpiego implements the program in partnership with Save the Children, the Futures Group, the Academy for Educational Development, the American College of Nurse-Midwives and IMA World Health.
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Jhpiego is an international, non-profit health organization affiliated with The Johns Hopkins University. For nearly 40 years, Jhpiego has empowered front-line health workers by designing and implementing effective, low-cost, hands-on solutions to strengthen the delivery of health care services for women and their families. By putting evidence-based health innovations into everyday practice, Jhpiego works to break down barriers to high-quality health care for the world's most vulnerable populations.

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ABBREVIATIONS AND ACRONYMS

ACT	Artemisinin-based combination therapy
ANC	Antenatal care
CAC	Community action cycle for community mobilization
CDC	Centers for Disease Control and Prevention
CMT	Community mobilization team
CoGes	Community health management committee (Burkina Faso)
CORP	Community-owned resource person
CQ	Chloroquine
CTS	Clinical training skills
DFID	Department for International Development (United Kingdom)
DHMT	District health management team
DHS	Demographic and Health Survey
DOT	Directly observed treatment
EML	Essential Medicines List
FANC	Focused antenatal care
FBO	Faith-based organization
FP	Family planning
GHS	Ghana Health Service
HIS	Health information system
HMIS	Health management information system
IEC	Information, education and communication
IMCI	Integrated management of childhood illness
IPCC	Interpersonal communication and counseling
IRS	Indoor residual spraying
ITN	Insecticide-treated net
IPT	Intermittent preventive treatment
IPT1	First dose of intermittent preventive treatment during pregnancy
IPT2	Second dose of intermittent preventive treatment during pregnancy
IPTp	Intermittent preventive treatment during pregnancy
ITG	Integrated Technical Guideline
LLIN	Long-lasting insecticide-treated net
M&E	Monitoring and evaluation
MAC	Malaria Action Coalition
MICS	Multiple Indicator Cluster Survey
MIP	Malaria in pregnancy
MIS	Malaria Indicator Survey
MOH	Ministry of health
NGO	Nongovernmental organization
NMCB	National Malaria Control Board
NMCC	National Malaria Control Center
NMCP	National Malaria Control Program
OR	Operations research
PMTCT	Prevention of mother-to-child-transmission of HIV
PQI	Performance and quality improvement
PSI	Population Services International

RBM	Roll Back Malaria
RDT	Rapid diagnostic test
RH	Reproductive health
SDG	Service delivery guideline
SP	Sulfadoxine-pyrimethamine
SPA	Service provision assessment
STG	Standard treatment guideline
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WHO	World Health Organization
WHOPES	World Health Organization Pesticide Evaluation Scheme

SECTION 1

INTRODUCTION

PURPOSE AND AUDIENCE

Today, approximately 40 percent of the world's population, mostly those living in the world's poorest countries, is at risk of malaria. Malaria causes 250 million acute illnesses (WHO 2008) and at least one million deaths annually.

Eighty-six percent of deaths due to malaria occur in Africa south of the Sahara, mostly among young children (WHO 2008). Malaria kills an African child every 30 seconds. Many children who survive an episode of severe malaria may suffer from learning impairments or brain damage. Pregnant women and their unborn children are also particularly vulnerable to malaria, which is a major cause of perinatal mortality, low birth weight and maternal anemia (RBM 2007a).

The ACCESS Program and its partners in the Malaria Action Coalition collaborated on the development of this practical guide to help African countries implement programs to prevent and control malaria in pregnancy (MIP). The guide was inspired by the WHO/AFRO *Strategic Framework for Malaria Control during Pregnancy in the African Region* (WHO 2004c), which presents a systematic approach to program implementation. This guide describes seven essential program components within that approach that are needed to put MIP policy into practice at the health care facility level. In addition, the Guide is intended to be complementary to the WHO/AFRO document *Integration of Malaria in Pregnancy Prevention and Control into Maternal and Child Health Services: Implementation Guidelines* (WHO 2005b). Country examples help make the guide relevant and practical.

The intended audience for this guide is policymakers, public health professionals and national malaria control and reproductive health (RH) program managers and health workers, as well as private, nongovernmental and faith-based organizations.

The guide comprises the following sections:

Section 1 Introduction

Section 2 Essential Components for Implementing MIP Programs

Section 3 Practical Solutions to Frequently Seen Problems:

- Women do not come early in their pregnancies for antenatal care (ANC)
- Women are not given anti-malarial drugs recommended per national guidelines or do not use them if they are available
- Women are unable to obtain insecticide-treated nets (ITNs) or do not use them if they are available

Section 4 Financing Considerations

The guide assumes that a national policy for MIP prevention and control has already been developed. The policy process is not complete, however, until the policy has been implemented at the level of the health care facility (see Section 2-1). To help ensure implementation, policy dialogue and advocacy must continue at the national, regional and district levels. Continuing dialogue where stakeholders engage in discussions to raise issues, share perspectives, find common ground and reach consensus regarding policy solutions is key to moving from policy to program implementation. Countries may establish a technical advisory group to provide guidance on policy and planning (WHO 2004c). This group can serve several functions including providing technical advice on policy and planning, mobilizing resources for program implementation, monitoring programs and making recommendations for mid-course corrections.

Advocacy involves promotion of issues by stakeholders for action by policy makers. Advocacy is needed at every step of the policy development and implementation process to maintain interest in the issues and to ensure adequate resource availability to address MIP. Several advocacy tools are available to interested groups, civil society, ministry of health (MOH) and other stakeholders to influence key decision-makers about the need to invest in MIP, the effectiveness of the existing interventions and the impact of the defined strategies. (See Resources at the end of this section.)

OVERVIEW OF THE WORLD HEALTH ORGANIZATION STRATEGY FOR THE PREVENTION AND CONTROL OF MALARIA DURING PREGNANCY IN THE AFRICAN REGION

Effective strategies to reduce the impact of MIP must address both the need to prevent illness in pregnant women and manage disease in women with clinical illness. The WHO *Strategic Framework for Malaria Prevention and Control during Pregnancy in the African Region* (WHO 2004c) recommends a three-pronged approach using:

- Intermittent preventive treatment during pregnancy (IPTp)
- Vector control including use of ITNs
- Case management of malaria illness and anemia

These guidelines emphasize initiating preventive measures from the first antenatal visit through the postpartum and newborn periods.

Intermittent Preventive Treatment

The WHO recommends that "all pregnant women in areas of stable malaria transmission should receive at least two doses of intermittent preventive treatment (IPT) after quickening" (WHO 2004c). Weekly chemoprophylaxis with chloroquine (CQ) is no longer recommended because of low adherence and increasing drug resistance (WHO 2004c). Sulfadoxine-pyrimethamine (SP) is the current antimalarial drug recommended for IPTp in stable-transmission areas of low SP resistance. SP is safe in the last two trimesters of pregnancy for both mother and fetus and is relatively easy to deliver to pregnant women as a routine part of ANC. The IPTp regimen allows a woman to take a treatment dose of an antimalarial during an ANC visit, as directly observed treatment (DOT) by a skilled provider.

For normal pregnancies, the WHO recommends four ANC visits, with the first visit occurring during the first trimester and the second, third and fourth visits after quickening. This schedule ensures that most pregnant women will receive at least two doses of IPTp during the pregnancy as recommended by the WHO.

As this guide is being published, the anti-malarial drug recommended for IPTp in stable-transmission areas is SP. Research for alternative drugs is ongoing as SP resistance increases. Countries should be in regular contact with the WHO for updates on current anti-malarial drug recommendations in their area, and program managers should be guided by their country's current policies and guidelines.

Vector Control

Vector control aims to reduce illness and death associated with malaria by preventing human-vector contact, thus decreasing the levels of transmission. The WHO recommends "a systematic approach to vector control based on evidence and knowledge of the local situation," an approach called Integrated Vector Management (WHO 2007). Two interventions of this approach are use of ITNs and indoor residual spraying (IRS).

Insecticide-Treated Nets provide protection from mosquito bites. The WHO recommends that pregnant women in areas of stable and unstable transmission sleep under an ITN nightly, starting as early in pregnancy as possible, and continue to do so postpartum with their newborns and children under five. Provision of ITNs should be part of the ANC package for pregnant women during routine ANC services.

Pregnant women should use both IPTp and ITNs for maximum protection against malaria. If a pregnant woman is unable to take IPTp for any reason, it is especially critical that she consistently sleep under an ITN to avoid malarial infection.

Indoor Residual Spraying (IRS) "refers to the spraying of all stable surfaces inside human habitations using an insecticide with residual action." The WHO states that "IRS remains a valuable intervention in malaria control when the following conditions are met:

- High percentage of the structures in an operational area have adequate sprayable surfaces, and can be expected to be well sprayed;
- Majority of the vector population is endophilic, i.e., rests indoors;
- Vector is susceptible to the insecticide in use." (WHO 2007)

Case Management for Malaria Illness and Anemia

Appropriate case management should be available to all women with malaria. In endemic areas, ANC services should include screening for signs and symptoms of malaria and anemia and prompt diagnosis and treatment. Ideally, malarial infection should be confirmed by a blood test; however, in low-resource settings where reliable light microscopy or rapid diagnostic tests (RDTs)[2] are not available, diagnosis can be made by clinical history. When women in areas of stable transmission have malaria infection, they are often asymptomatic. In these areas where it is difficult to detect malaria through signs and symptoms, it is extremely important to provide IPTp to clear the parasites, which can still affect fetal growth and birth outcome. In areas of seasonal or unstable malaria, pregnant women are more likely to display signs and symptoms when infected with malaria. Because there are many diseases that share similar symptoms with malaria and because current recommended treatment is relatively expensive, use of microscopy, RDTs or thorough clinical examination to confirm presence of malaria can be cost-effective for health services.

A woman who has fever (or recent history of fever) and complications such as unconsciousness or convulsions, rapid or difficult breathing, severe vomiting and/or dehydration, weakness/fatigue, pulmonary edema or hypoglycemia may have *severe* malaria. Women with severe malaria need emergency care from a skilled provider. This care may include stabilization, appropriate referral, administration of appropriate antimalarials, blood transfusion and other life-saving measures (WHO 2002, 2006a).

[2] RDTs can be useful for diagnosing malaria in situations where clinical microscopy is not available. RDTs are available as a dipstick, cassette or card, which detect specific antigens produced by malaria parasites present in the blood of infected persons. When considering the use of RDTs in case management, refer to the specific country's treatment policies and to WHO guidance. For more information on RDTs, consult the World Health Organization (WHO). 2006b. *The Use of Malaria Rapid Diagnostic Tests*, second edition. WHO: Geneva.

A woman who has a fever (or recent history of fever) with or without symptoms such as chills, headache, body/joint pains or loss of appetite may have *simple* or uncomplicated malaria. Management of uncomplicated malaria should include administration of antimalarial drugs according to national reproductive health guidelines, as well as close monitoring (WHO 2002, 2006a).

While SP is currently recommended for malaria prevention, the WHO recommends use of artemisinin-based combination therapies (ACTs) as first-line treatment in the second and third trimester of pregnancy. In light of these new therapies, it is essential that countries establish pharmacovigilance systems so that providers can monitor, treat and report adverse events associated with the use of ACT therapies (WHO 2006a). For treatment in the first trimester of pregnancy, the WHO recommends quinine.

INTEGRATION, COLLABORATION AND PARTNERSHIPS

All partners should agree that integration is best achieved by establishing the "Three Ones" principle at the country level. This means that all malaria partners must contribute to and agree to work with **one** national malaria policy; work together on **one** national coordination mechanism; and contribute to **one** national monitoring and evaluation (M&E) framework and process (Roll Back Malaria 2007a).

When integration is achieved as a key MIP program readiness component, one would see: joint strategies, planning and sharing of information between National Malaria Control Programs (NMCPs) and RH programs at the national level; integration of RH, HIV/AIDS and MIP in administration and supportive supervision at the district level; and, MIP, RH and/or HIV/AIDS provided together at the health care facility level. Integration is best achieved when partners meet together, share experiences and develop joint plans. A national malaria partnership forum is a crucial mechanism to foster integration.

The WHO/AFRO *Strategic Framework* proposes the establishment of a technical advisory group with national and partner stakeholders to advise on policy and to have a national implementation plan and an important integration, coordination and collaboration mechanism (WHO 2004c). Nominating a high-level focal person to coordinate the integration process nationally is recommended. This Roll Back Malaria (RBM) Partnership Forum should be based with the NMCP but also include other key ministry of health programs including RH and Pharmacy/Essential Drugs. Other government agencies may be involved. Key international and bilateral partners should be members. Examples include the WHO, UNICEF, USAID, DFID, Japan International Cooperation Agency and World Bank, depending on which organization has programs in a

particular country. The nongovernmental organizations (NGOs) and business communities often contribute to malaria control and include faith-based health services, the Red Cross/Crescent Society, professional associations and the pharmaceutical industry. Large corporations may have philanthropic programs addressing malaria. Working together, the RBM Partnership Forum can contribute to the following additional malaria program implementation steps as stated by the WHO (2004c):

- Conduct needs assessment and situation analysis to define the epidemiology of MIP and the capability of the RH and antenatal programs.
- Develop or review the national malaria control policy and strategy including guidelines for malaria prevention and control in pregnancy.
- Develop or update a comprehensive strategy and implementation plans for malaria prevention and control in pregnancy.
- Develop advocacy and communication strategies for malaria prevention and control in pregnancy in favor of integration of MIP with RH services.
- Strengthen support systems for antenatal services, including interventions for prevention and control of malaria in pregnancy, and integrate MIP programs with maternal and child health services through ANC.
- Build personnel capacity for malaria control and prevention in pregnancy for all categories of personnel dealing with RH in order to provide integrated services.
- Define a research agenda for malaria and its control in pregnancy.

In addition to these program implementation steps stated by the WHO, it is important to:

- Integrate malaria control activities into a national M&E plan.
- Reorient health services to render them more friendly and accessible to pregnant women.
- Involve communities in all critical stages of policy development and program design, including development of services, implementation and evaluation.

When the above activities are planned and implemented jointly by a partnership, there will be a commitment for each partner to contribute to the success of each component. For example, all partner programs will be based on the national policy and strategy, and each partner will give input to a unified national M&E system.

While the RBM Partnership Forum would be based in the NMCP, all members would be expected to help with the logistics of arranging meetings and activities. Holding meetings every month or two months is

essential to achieve goals of coordination, and different member organizations can rotate the hosting of such meetings. Another structural aspect of the partnership would be subcommittees, and of relevance to this guide would be the formation of an MIP subcommittee.

Collaboration between National Malaria Control and Reproductive Health Programs

The RH division of the MOH should play an active role in the RBM Partnership Forum and possibly even chair the MIP subcommittee. In addition, NGO and private RH service representatives and professional associations (e.g., midwives) should be represented in the subcommittee.

The WHO/AFRO *Strategic Framework* recommends antenatal clinics as the platform to implement MIP programs because nearly 70% of women in Africa attend antenatal clinics at least once during their pregnancy, and many attend at least twice (WHO/UNICEF 2003). The *Strategic Framework states "*The Malaria Programme of WHO/AFRO has targeted the antenatal clinic as the site for accelerating program implementation of malaria prevention and control during pregnancy in those areas with stable malaria transmission and high antenatal clinic attendance. In areas with low antenatal coverage, the development and strengthening of community-based programs is important. In areas with adequate antenatal coverage, community-based programs can enhance coverage" (WHO 2004c).

The WHO recommends four antenatal visits for normal pregnancy, with the first visit during the first trimester and the following three visits after quickening. In addition to provision of micronutrient supplementation (including iron and folate) and immunizations for the mother, as well as counseling and testing for HIV and counseling on prevention of mother-to-child transmission, family planning and nutrition, the antenatal clinic can also provide valuable ITN distribution, advocacy and education for pregnant women (WHO 2004c).

Many countries use an approach called "focused antenatal care" or FANC, which emphasizes quality over quantity of visits, based on the four-visit model recommended by WHO. The approach focuses on assessment and actions needed to make decisions and provide care for each woman's individual situation according to the WHO guidelines of a minimum of four ANC visits—ideally before 16 weeks; and around 24–28 weeks, 32 weeks, and 36 weeks—for women whose pregnancies are progressing normally. The framework for FANC is provision of a minimum package of evidence-based services to all pregnant women during ANC to promote health, detect existing diseases, prevent and detect complications of pregnancy, and foster birth preparedness. These basic services are then adapted and "focused" on each woman's individual situation and needs. This approach has resulted in increased attendance at ANC as well as higher use of skilled attendance at birth (Kinzie and Gomez 2004).

Delivery of malaria interventions as part of ANC requires strong collaboration and linkages between malaria control and RH programs at all levels of the health care delivery system.[3]

Therefore, the WHO Malaria Programme and Safe Motherhood Programme work in close collaboration—both are committed to strengthening RH services (**Table 1**). At the national level, malaria control programs provide technical oversight while RH programs manage implementation. The malaria control programs collaborate with the RH programs in providing technical assistance and support supervision. Such collaboration will ensure effective implementation through ANC services of the recommended strategies for the prevention and control of malaria in pregnancy.

Table 1. Collaboration between National Malaria Control and RH Programs: Rationale

NATIONAL MALARIA CONTROL PROGRAM ROLL BACK MALARIA	REPRODUCTIVE HEALTH PROGRAM MAKING PREGNANCY SAFER/SAFE MOTHERHOOD
Strategies	
• Improving health services • Implementing evidence-based interventions to prevent malaria among pregnant women	• Controlling the causes of maternal and infant mortality
Expected Outcome	
• Reduction of mortality and morbidity from malaria among pregnant women	• Reduction of maternal and infant mortality
• The aim of this collaboration is to develop and implement joint strategies for reducing morbidity and mortality from malaria among pregnant women.	

Strengthened national-level linkages between reproductive health and national malaria control programs, including policy, program implementation, monitoring and supervision, provide a foundation to strengthen integration of services at the regional, district and community levels. Such integration logically occurs at the peripheral facility level because of the multipurpose function of health care workers at that level. For service delivery to be effective, however, integration must be supported throughout the health care delivery system.

National level integration and linkages should set a foundation for building collaboration at sub-national levels including states, provinces and local governments. In the public sector at the district level, one may find that ITNs are being handled by a disease control officer, SP is ordered and stocked by an essential drugs/pharmacy officer and the actual delivery of MIP services through ANC is handled by a maternal and child health/RH coordinator. Often the private sector is ignored. District level coordination and malaria partnership committees must be encouraged. The national RBM Partnership can develop guidelines for local partnerships,

[3] *Adapted from*: World Health Organization (WHO). 2005a. *Framework for Collaboration between the Malaria Control Programme and the Reproductive Health Programme to Control Malaria in Pregnancy.* WHO Regional Office for Africa. (Draft July 2005).

and donor members of the forum can help implement these guidelines. Details of coordination at different levels follow:

At the National Level

- Develop national policy and strategic plan addressing malaria control among pregnant women
- Develop comprehensive strategic plan with details on goals, objectives and strategies for malaria control among pregnant women
- Develop standards, protocols and training manuals
- Develop tools for supervision, monitoring and evaluation
- Develop communication strategies, tools and aids for raising awareness and for advocacy directed at stakeholders, health workers and the community
- Define common indicators for M&E of implementation of interventions to prevent and treat malaria among pregnant women
- Advocate for the adoption and implementation of evidence-based interventions to control malaria among pregnant women
- Mobilize resources and strengthen partnerships
- Conduct operational research
- Develop guidelines for integration of malaria control-activities and antenatal care

At the Regional/Provincial Level

- Develop a district-based plan of action
- Support implementation of district plans
- Provide supervision, monitoring and evaluation
- Conduct assessments to identify needs at health center and community levels

Collaboration should take place at the national, district and the community levels, and involve the following aspects:

- Policy development or review
- Development of strategic plans and plans for implementation
- Development of standards, protocols and training manuals
- Development and building-up of partnerships
- Drug ordering
- Drug distribution
- ITN distribution

- Advocacy and communication
- Implementation of interventions
- M&E of implementation
- Operational research
- Assessments

In each of these areas, both the NMCP and RH program should take a concerted action, while determining their respective responsibilities.

Collaboration with Other Public Health Programs

Among the other programs with which the NMCP may have to collaborate are two programs on child health and one on HIV/AIDS action. Such programs should ideally be represented in the national RBM Partnership Forum.

The Expanded Program on Immunization (EPI). The objectives of the Expanded Program on Immunization are to reduce mortality and morbidity from vaccine-preventable diseases (tuberculosis, diphtheria, whooping cough, tetanus, polio, measles and hepatitis B) among children and neonates (by vaccination of pregnant women for tetanus). The program follows two approaches to expand vaccine coverage: routine vaccinations and vaccination campaigns. These strategies present potential opportunities for interventions to control malaria among pregnant women, such as raising community awareness and distributing ITNs.

Program for the Integrated Management of Childhood Illness (IMCI). Since 1996, National Malaria Control Programs and IMCI have been engaged in close collaboration to reduce morbidity and mortality among children under the age of five. A working group has been set up to that end and has defined approaches to strengthen and extend the implementation of both programs' interventions. Strategies capable of strengthening malaria control among pregnant women could be based upon policy development or review, advocacy and resource mobilization, strengthening partnership and community involvement (women's and youth groups).

The AIDS Control Program. Co-infection with HIV and malaria compounds negative effects for the pregnant woman and her unborn baby. The prevalence and intensity of malaria infection during pregnancy is higher among HIV-infected women, and the risk to the woman and her newborn exists regardless of the number of times a woman has given birth (Verhoeff et al. 1999). A cohort study conducted in western Kenya showed that co-infection more than doubled the risk of moderate to severe anemia in all pregnant women (Ayisi et al. 2003). This means that a considerable proportion of children born to mothers with both HIV and malaria are more likely to have a low birth weight and die in infancy. HIV

infection in pregnancy is associated with reduced efficacy of malaria prophylaxis and treatment. HIV-infected pregnant women in areas with stable malaria transmission should receive **either** IPTp with SP **or** daily cotrimoxazole prophylaxis if the stage of HIV infection requires that the woman receive it to prevent opportunistic infections (WHO 2004a). In HIV-infected women, three doses or more of SP are recommended to have the same benefit as two doses or more of SP in HIV-negative women. In settings where the HIV seroprevalence among pregnant women is more than 10% and universal screening of pregnant women for HIV is not available, it is recommended that all pregnant women receive three doses or more of IPTp with SP.

The AIDS control program must integrate prevention of malaria among pregnant women; similarly, the NMCP must integrate care services for HIV-infected women and AIDS patients. This calls for enhanced collaboration between both programs to implement interventions to control malaria and HIV/AIDS among pregnant women, using antenatal clinics as a platform. These interventions include: early diagnosis; referral and counter-referral mechanisms for HIV-infected women for antimalarial and antiretroviral treatment; malaria prevention using IPTp, with at least three doses of SP for women who will not receive daily preventive treatment with cotrimoxazole; and an ITN.

CURRENT STATUS OF COUNTRY MIP POLICIES AND PROGRAMS

It is important to take stock of where a country is in implementing MIP policies and programs to set appropriate goals and determine the steps needed to achieve those goals and program scale-up. As a first step, it is necessary to conduct a needs assessment to determine gaps in MIP policies and programs in a country. This can be done as part of a broad assessment of a country's malaria prevention and control policies and programs, or in a more targeted way focusing just on MIP. The WHO/RBM has developed a situation analysis methodology and instruments that can be used to conduct a broad assessment of malaria programming. The RBM situation analysis approach consists of a systematic review of malaria control and related health sector development activities as a basis for the development of national strategies for rolling back malaria (WHO 1999). Countries can choose from the set of data collection tools associated with this methodology to suit local data collection goals and needs. In addition, the Centers for Disease Control and Prevention (CDC) has developed a set of rapid assessment tools focused specifically on malaria in pregnancy. (See Resources at the end of this section.)

There are several ways to gather information needed to assess the current status of MIP program implementation. Information about MIP policy,

guidelines, resources and health service statistics may be readily available within the MOH. Population-based data about malaria may be available from existing surveys, such as Demographic Health Surveys (DHS), Multiple Indicator Cluster Surveys (MICS) and Malaria Indicator Surveys (MIS). It may also be necessary to collect primary data. For example, data about MIP services can be obtained directly from antenatal clinics through observation, interviews and other assessment tools.

Once initial MIP data have been collected, it can be used to classify a country according to which "stage" of MIP implementation it has achieved in different areas. Jhpiego has developed a framework, called "Stages of MIP Program Implementation Matrix" that uses eight components to summarize and rank the current MIP situation. These components include: integration, policy, commodities, quality assurance, training, community-based MIP, M&E and financing. The Stages of MIP Program Implementation Matrix that follows (**Table 2**) describes the fours stages of implementation for each of these eight components and is designed to help your country determine its current stage of MIP readiness. The guide draws on lessons learned from many countries that can help all countries in overcoming the challenges they are facing with implementation.

This guide can also help countries in planning scale-up of MIP prevention and control programs. The USAID CORE[4] group defines "scale" as "widespread achievement of impact at affordable cost." CORE offers the following definition of "scaling-up" per the International Institute for Rural Reconstruction—"Scaling-up refers to efforts to bring more quality benefits to more people over a wider geographical area more quickly, more equitably, and more lastingly" (Core Group 2005). Thus, attainment of each stage signals progress in scaling up, so that when a country has achieved Stage 4, it can be considered to have fully scaled-up its MIP prevention and control program.

[4] Child Survival Collaborations and Resources Group

Table 2. Matrix of Stages of MIP Program Implementation

MIP READINESS COMPONENT	STAGE 1	STAGE 2	STAGE 3	STAGE 4
Integration See Section 1	• No meetings or communication between NMCP and RH programs at national level • Poor or coincidental integration at district level • No integration of MIP with other public health programs	• Some meetings or communication between NMCP and RH program at national level • Attempts at integration at district level • Attempts to integrate MIP with other public health programs	• Sharing of information and regular meetings occur between the NMCP and RH program at national level • Stated focus of integration at district level • Some MIP, RH, child health, and/or HIV/AIDS services have been bundled together in health services	• Joint strategies, planning and sharing of information between NMCP and RH programs at national level • District level promotes integration of RH, child health, HIV/AIDS and MIP in administration and supportive supervision • MIP, RH, child health, and/or HIV/AIDS are provided together in health services
Policy See Section 2-1	• No or minimal MIP policies, strategies or SDGs (service delivery guidelines) available in-country	• Some MIP policies, strategies or SDGs developed • Dissemination not done or not yet completed	• MIP policies, strategies or SDGs developed • Dissemination partial • Utilization unknown or incomplete	• MIP policies, strategy and SDGs developed and being used at all levels of the health system
Commodities See Section 2-2	• Malaria drug and ITN procurement and distribution systems for ANC clinics poorly functional (e.g., stock-outs) • WHO-recommended medicines for malaria and/or MIP have not been approved	• Malaria drug and ITN procurement and distribution systems for ANC clinics functional • WHO-recommended medicines for malaria and/or MIP have been approved but not widely available • ITNs available sporadically	• Malaria drug and ITN procurement and distribution systems for ANC clinics functional • WHO-recommended medicines for malaria and/or MIP have been approved and are widely available • ITNs available in many places	• Malaria drug and ITN procurement and distribution systems for ANC clinics efficient • WHO-recommended medicines for malaria and/or MIP are always available • ITNs always available

MIP READINESS COMPONENT	STAGE 1	STAGE 2	STAGE 3	STAGE 4
Quality Assurance See Section 2-3	• MIP quality assurance standards have not been developed • Supportive supervision not in place to maintain quality in MIP services • Quality of MIP services poor	• MIP quality assurance standards have been developed but are not widely used • Supportive supervision for MIP services in place to limited extent • Quality of MIP services low	• MIP quality assurance standards have been developed and are used in some areas • Supportive supervision for MIP services increasingly utilized • Quality of MIP services moderate	• MIP quality assurance standards have been developed and are used systematically • Supportive supervision for MIP services utilized systematically • Quality of MIP services high
Training See Section 2-4	• No competency-based training on MIP has been planned • Pre-service nursing, midwifery and medical curricula outdated with regards to MIP	• Competency-based in-service training on MIP planned or has occurred on limited basis • Pre-service nursing, midwifery and medical curricula have been revised with regard to MIP but not consistently taught to students	• Competency-based in-service training on MIP conducted for many health service providers • Updated pre-service nursing, midwifery and medical MIP curricula are being taught at most academic institutions	• Competency-based in-service training on MIP conducted for all appropriate cadres of health service providers • Updated pre-service nursing, midwifery and medical MIP curricula are being taught at all academic institutions
Community-Based MIP Programs See Section 2-5	• Community action / awareness on MIP low • No resources available for community • Low community acceptance of MIP prevention and treatment measures (ITNs, IPTp and case management)	• Community action / awareness on MIP raised through research, advocacy and/or programs • Few resources developed for communities • Some community acceptance of MIP prevention and treatment measures	• Community action / awareness on MIP strong through research, advocacy and/or programs • Appropriate resources widely available • Moderate community acceptance of MIP prevention and treatment measures	• Community action groups are strong partners in national MIP prevention efforts • Appropriate resources widely available • Widespread community acceptance of MIP prevention and treatment measures

MIP READINESS COMPONENT	STAGE 1	STAGE 2	STAGE 3	STAGE 4
M&E See Section 2-6	• Routine data for MIP service delivery not available • No MIP indicators developed • No baseline[5] information or research results exist for country	• Routine data for MIP service delivery available • MIP indicators designed but not integrated into nation system • Some baseline information or research results exist for country	• Routine data for MIP service delivery available, collected and reported on • MIP indicators agreed upon and data collection started • Baseline information or research results exist for country	• Routine data for MIP service delivery available, collected, reported on and used for decision-making • MIP indicators being collected regularly • Some endline studies designed to capture achievements and/or impact studies being conducted
Financing See Section 4	• National government has not committed funds to MIP programs • No donor funding exists for MIP • No proposals submitted to donors for MIP funding	• National government has not committed adequate funds to MIP programs to cover projected costs • Limited donor funding exists for MIP	• National government has committed funds to MIP programs that significantly contribute to projected costs • Strong donor funding exists for MIP	• National government has committed and disbursed funds to MIP programs which that significantly contribute to projected costs • Ample donor funding exists for MIP and is being used effectively

[5] Relevant baseline information includes community utilization of MIP, epidemiology of malaria transmission and pharmacovigilance.

Operations Research

Depending upon where a country is in the stages of MIP program implementation, operations research (OR) is a consideration for determining the program area on which a country will focus. OR can be defined as a practical inquiry into the workings of a program. OR, which is also known as implementation research, helps us learn how to implement and manage our programs better.

Ideas for OR can arise from the regular M&E of program implementation. For example, we may notice that only 40% of women who get the first dose of IPTp get their second dose. We can design a simple research protocol to learn why this is happening. First, we can review our records for the past year and find out at what point during pregnancy women are registering for ANC. We might thereby learn that most are coming for the first time at seven or eight months of gestation and therefore may not have enough time to get two doses. Then we might design a brief community survey with a few key questions that ask women why they register late and what they think about the benefits of IPTp. Alternatively, we can hold a series of focus groups with women in the community—at market, or after attendance at mosque or church, and ask them to discuss among themselves the issues of ANC attendance and perceptions about IPTp. Based on what we learn from the women themselves, we can design community- and clinic-based health education to encourage earlier and complete attendance that enables them to get the two IPTp doses. We could design an OR study, implementing the health education at half the clinics in the district and then compare afterwards whether there is improved IPTp coverage in the clinics where the health education took place compared with clinics where it did not. If we have improved coverage, we can then use the results of OR to scale up improved services. In short, OR enables us to ask questions about the implementation of our programs and helps us design and test solutions for identified problems.

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SECTION 2

ESSENTIAL COMPONENTS FOR IMPLEMENTING PROGRAMS

OVERVIEW

The WHO/AFRO *Strategic Framework* presents a systematic approach to the implementation of programs for prevention and control of MIP. Within this implementation framework are program components that must be addressed for activities to occur at the health care facility.

In this section, the program implementation steps outlined in the WHO/AFRO *Strategic Framework* are further elaborated upon as seven key program components, the key actions required to implement each component, and key issues to be considered as part of the implementation process. Country-specific examples are included and resources that provide more detailed information are recommended, where available.

The key components in this section are as follows:

2-1 Translate MIP Policy into Service Delivery Guidelines (SDGs)
2-2 Commodities
2-2.1 Ensure Appropriate Pharmaceutical Management for Prevention and Treatment of MIP
2-2.2 Ensure Distribution of Insecticide-Treated Nets for Prevention and Control of MIP
2-3 Use Performance Standards to Help Assure Quality MIP Services
2-4 Build Human Capacity through Training to Ensure MIP Guidelines Implementation
2-5 Mobilize Communities to Take Action to Prevent MIP
2-6 Monitor and Evaluate Programs for Prevention and Control of MIP

The Key Actions for each component are presented in the format of an action plan, with columns for "Responsible" and "Timeline," to help countries easily adapt the checklist into a planning document.

The guide is based on the assumption that a national policy for MIP prevention and control has already been established. Thus, the first component is that of translating policy into SDGs.

SECTION 2-1

TRANSLATE MIP POLICY INTO SERVICE DELIVERY GUIDELINES

Service delivery guidelines (SDGs) are a technical tool for achieving standards,[6] and they provide the detailed information needed to implement the national policy guidelines. They are used by health care workers, their supervisors and management teams throughout the system as the source of specific, up-to-date information about MIP interventions offered in a country. SDGs complement policy guidelines by:

- Describing MIP protocols and how ANC serves as a platform for their implementation;
- Introducing related components needed for quality service provision, such as the principles and procedures for infection prevention practices in ANC;
- Explaining the importance of positive interpersonal communication between health care providers and clients and their families;
- Recommending how MIP services should be organized at the various levels of the country's health care system; and
- Serving as the basis for MIP learning and resource materials and evaluation systems for training and health care delivery.

National SDGs translate international evidence-based standards into appropriate, practical instructions for skilled providers. They furnish details about how and by whom services are to be managed and delivered. They generally include protocols for the performance of specific MIP tasks, drug and supply lists, DOT, and supporting measures, such as infection prevention. Guidelines permit health care delivery, training, supervision, logistical support and management practices to be of consistently high quality at all levels of the health care system. They provide the means to standardize MIP practices, as well as record keeping for monitoring purposes.

(*Adapted from*: Jhpiego/MNH Program. 2001. *Workshop Report: Implementing Global Maternal and Neonatal Health Standards of Care*. Jhpiego: Baltimore, MD.)

[6] WHO defines a standard as an agreed-upon level of performance that specifies what action should be taken. A standard must be achievable, observable, desirable and measurable.

TRANSLATE POLICY INTO SERVICE DELIVERY GUIDELINES			
KEY ACTIONS	**RESPONSIBLE**	**TIMELINE**	**STATUS**
Identify technical committee to draft MIP guidelines (based on previously held national advocacy meeting setting or revising MIP policy) and define performance standards (see Section 2-4): ● MOH, including malaria and reproductive health program representatives ● Physicians, including private sector ● Nurse-midwives, including private sector ● Clinical officers ● Pre-service education leaders ● Representatives of professional associations (e.g., midwives, physicians) ● Pharmacists ● Nongovernmental and faith-based organizations ● Bilateral and multilateral organizations ● Community health workers ● Community leaders ● Retailers, shopkeepers			
Conduct focused needs assessment to provide information about existing MIP services, including: ● Providers' knowledge and practices and their suggestions for implementing MIP ● Services offered and how they are integrated with existing ANC services ● Supplies and drugs available and supply chain ● Infection prevention ● Record keeping (e.g., registers and reporting) ● Supervision: How is it done? (e.g., supervision checklist) ● Use of information for decision-making ● Client and community knowledge and practices ● For more information on M&E, including specific indicators, see **Section 2-6**.			
Conduct technical update workshop for technical committee and other key stakeholders to: ● Provide accurate, up-to-date, evidence-based information on MIP ● Discuss use of performance standards to help ensure high-quality services ● Identify challenges to implementation of new/revised MIP guidelines ● Present best practices and lessons learned globally, regionally and from your country ● Gain buy-in and support for country implementation			
Draft SDGs covering IPTp, ITNs and case management. They should include detailed, basic and essential information on:[7] ● Prevention of MIP ● IPTp drug dose, timing of first dose, number of doses			

[7] Refer to World Health Organization (WHO). 2006. *Guidelines for the Treatment of Malaria* for guidance.

TRANSLATE POLICY INTO SERVICE DELIVERY GUIDELINES			
KEY ACTIONS	**RESPONSIBLE**	**TIMELINE**	**STATUS**
● Minimum dosing interval ● Who will dispense drug (e.g., nurse, nurse-midwife, physician) ● Who will dispense ITNs ● Training of providers of ITNs (public and private sector), etc. ● Need for DOT, including clean cup and clean water for each client ● Whether there will be a charge for the drug ● Required documentation/routine monitoring (e.g., ANC card, clinic records) ● Counseling for clients about antimalarial drugs ● Protocols for HIV-infected women ● Counseling about the use of/provision of ITNs (access through ANC and/or other mechanisms) ● Case management and/or referral of uncomplicated and severe malaria per national guidelines ● How to use information (routinely collected locally and nationally) at the service delivery level			
Circulate draft guidelines for feedback and endorsement (with deadline for inputs) to: ● MOH (malaria and reproductive health programs) ● Experienced clinicians (physicians and nurse-midwives) ● Pre-service education programs ● Professional associations ● Donors ● Community representatives			
Conduct field-test of guidelines by stakeholders and groups of providers at various levels and types of facilities and by different cadres of health services personnel. Obtain information on services received by clients: ● Guidelines must be clear, practical and easily understood. ● Inclusion of stakeholders in field-testing helps to create a sustainable system.			
Gain official MOH endorsement of guidelines.			
Prepare guidelines for dissemination and develop corollary materials: ● Translate guidelines into local languages as needed. ● Develop, test and translate job aids focusing on new or updated content. ● Develop and translate learning package for in-service training. ● Develop and translate orientation package for widespread dissemination of guidelines to providers, supervisors and management teams. ● Develop clinical performance standards using SDGs.			

TRANSLATE POLICY INTO SERVICE DELIVERY GUIDELINES			
KEY ACTIONS	**RESPONSIBLE**	**TIMELINE**	**STATUS**
● Update pre-service education curricula to include new didactic content and implications for clinical practice. ● Conduct knowledge and skills update for pre-service education tutors, clinical preceptors and in-service trainers. ● Develop, test and translate advocacy and information, education and communication (IEC) materials to ensure that content is compatible with new SDGs. ● Update ANC card and related records throughout health system. ● Update quality improvement and supervisory tools to incorporate new guidelines. ● Revise job descriptions to be consistent with guidelines.			
Print adequate number of copies of guidelines and job aids to ensure that each health care facility in the country receives at least one copy of the SDGs and appropriate job aids.			
Print adequate number of copies of corollary in-service learning package, pre-service curricula, advocacy and IEC materials, ANC cards and related records.			
Hold national advocacy meeting to launch and disseminate guidelines to a diverse audience: ● Politicians ● Professional associations ● Health care providers ● Media ● Community			
Disseminate guidelines to regional and district levels to target and inform: ● Decision-makers ● Health care providers in public and private sectors ● Women's health advocates ● Community groups ● Pre-service educators ● Clinical trainers ● Supervisors ● Managers Disseminate guidelines through appropriate channels of communication, including: ● Workshops using orientation packages ● Supervision visits ● In-service training ● Pre-service education ● Community awareness campaigns (malaria day, etc.) ● Job aids			

KEY ISSUES

The "key actions" listed for developing and implementing SDGs do not necessarily occur in sequence. The order may differ or the actions may occur simultaneously. For example, performance standards may be developed first, as part of a human capacity development initiative, and the SDGs are developed later, using those performance standards as a guide. In the absence of national SDGs, international evidence-based SDGs can be used to develop the performance standards. There is no standardized implementation process—it may occur from the bottom up as well as the top down.

It is essential that the technical committee charged with drafting the MIP guidelines be broadly representative and multidisciplinary to help ensure that the guidelines are integrated in content, administration and service delivery. Integration of services refers not only to using ANC as the platform for delivering MIP prevention and case management, but also the administrative systems for planning, resource allocation, financial management, M&E and human capacity development. This technical committee is usually a sub-committee of the national technical advisory group.

- As discussed in the Introduction, ANC and MIP guidelines generally are developed as parallel but separate protocols because the divisions or offices of malaria control and reproductive health are separate. Integration of MIP guidelines usually occurs at the point of service delivery and through the development of performance standards for MIP services (see Section 2-4). It is important to remember that ANC is the platform for the delivery of all maternal health services, including PMTCT services. Inclusion of other important services will help ensure that these sometimes vertically funded programs do not become mutually exclusive. Advocacy activities should ensure that all corollary materials listed in the Key Actions checklist are consistent with new policies as expressed in both sets of guidelines.
- Advocacy and communication activities likely began when the MIP policy was reviewed and revised. Communication activities on behalf of SDGs may occur together or sequentially to help ensure adequate dissemination and understanding of the guidelines. Examples of activities include radio dramas, posters and logos promoting health care facilities that use the guidelines and fliers that highlight important aspects of the guidelines.
- Key to the success of MIP guidelines is ensuring that 100% of intended users receive and understand the documents. Achieving this goal requires a multi-pronged approach that may include supervisory visits, in-service training and orientation workshops to fill the immediate information gap. MIP content and protocols must be incorporated into pre-service education for long-term, sustainable

implementation. In all instances, supportive supervision through follow-up visits using standards-based checklists is required to help ensure that SDGs are being implemented in service provision.

- A cascade approach, using an easy-to-understand orientation package and job aid, has proven successful in several countries for rapidly informing providers, supervisors and management teams of new or revised SDGs on a large scale. The orientation package is developed using simple language delivered on PowerPoint® slides. Job aids are a key component of the package because they guide the provider in the day-to-day tasks needed to provide MIP care. Staff who have attended an orientation workshop use the orientation package to inform colleagues, who in turn inform other colleagues.

COUNTRY EXAMPLE: ZAMBIA

Over an extended period of time in 2000–2002, a number of stakeholder meetings were convened in Zambia to discuss the need to change the malaria guidelines, in light of the increasing evidence of significant resistance to chloroquine. These meetings were coordinated by the National Malaria Control Center (NMCC), and included key stakeholders from the Ministry of Health, University of Zambia Medical School/Teaching Hospital (UTH), Medical and Nursing Councils, and prominent multilateral and bilateral partners and implementing agencies.

While there was little disagreement over the desire to implement a new policy for MIP, incorporating IPTp with SP, the decision to switch from chloroquine and the choice of an alternative first-line antimalarial were much more difficult to resolve. When it became apparent that a consensus was emerging, the MIP Committee was ready to take action. This group was chaired by the Maternal and Neonatal Health (MNH) Program led by Jhpiego and incorporated members from the NMCC, MOH, Zambia Integrated Health Program, Society for Family Health (SFH) (chair of the ITN working group), University Teaching Hospital's Department of Obstetrics/Gynecology, and the WHO.

The MIP policy of the government covered four major components:

- **Prevention**: All pregnant women should be informed and empowered to protect themselves from malaria through proven protective measures, such as ITNs.
- **Intermittent Preventive Treatment**: All pregnant women in Zambia should receive three doses of IPTp during their pregnancies, even in the absence of malaria symptoms, as a preventive measure.
- **Anemia**: Micronutrient supplementation and anemia prevention and management guidelines should be followed for all pregnant women.

- **Case Management**: Symptomatic malaria in pregnant women must be recognized early and acted on promptly and treated effectively.

These were translated by the MIP Committee into SDGs and inserted into the maternal health section of the Integrated Technical Guideline for Front Line Health Workers (ITG), which was being revised by a large stakeholder group (see Figure 2-1-1).

In translating these components into SDGs, the Committee focused on the public sector because this population represents more than 90% of women attending ANC one time, and more than 70% of women attending ANC four or more times. The Committee also determined specific dosing and dosing schedules/regimens for IPTp with SP and treatment of symptomatic malaria in pregnant women; agreed on issues around anemia management (routine deworming), definitions and key messages; developed the M&E tools; agreed on the dissemination program (the orientation workshop approach); developed the orientation package and a provider job aid; and carried out the dissemination workshops. Designated Committee members also ensured that the same information was incorporated into the ITGs, the PMTCT guidelines and tools, etc. The Committee also took these guidelines and developed a one-day orientation package for health workers and managers. Both of these processes involved several stages of stakeholder meetings, materials development, review and finalization.

Figure 2-1-1. Sample Page Adapted from ITGs Containing MIP Guidelines

Specific Promotive and Preventive Activities at Each Antenatal Visit				
Antenatal Care Matrix	**Weeks of Gestation**			
Parameter	**1st visit or < 16 wks**	**2nd visit 20–24 wks**	**3rd visit 28–32 wks**	**4th visit 36 wks**
Drug administration and immunization				
Folic acid: 5 mg daily prior to conception or from earliest contact	✓	✓	✓	✓
Iron: 200 mg daily from earliest contact (provide counselling on the side effects as well as the dangers of overdose *especially to children*). Treatment dose if anemic 200 mg t.i.d.	✓	✓	✓	✓
Sulfadoxine-pyrimethamine (SP, also know as Fansidar): Intermittent preventive treatment for malaria should be given to *all* pregnant women, even without symptoms, three times during pregnancy: 3 tablets taken at one time, *after* the first trimester and at least one month apart, treatment to be given and observed during antenatal visits. This approach will be accompanied by the provision of ITNs at highly subsidized prices through the ANCs and the voucher system.		✓	✓	✓
Tetanus toxoid		✓	✓	

Because the MIP policy changes were not highly technical, assuming that ANC providers had basic skills, the MIP Committee designed a one-day orientation for managers and providers in order to jump-start the program and get rapid national coverage. The orientation package covered the four major components of the policy, explained the policy-making process, the medical basis for the policies, and the specific guidelines for health personnel to follow. It also included clinical information to reinforce specific weak skill areas (e.g., assessing gestational age, ruling out pregnancy when treating malaria, etc.). The package contained questionnaires, exercises and PowerPoint presentations with facilitators' notes. They were packaged in a format that was easy to use and follow, taking into consideration the burden on health workers and managers, the high rates of ANC attendance, and the existing knowledge base of the health care providers delivering antenatal coverage. The package also included a simple job aid, as well as tally sheets to help districts in monitoring the implementation of the MIP policy.

Once the orientation package was adopted, it was disseminated nationally, and reinforced with official circulars from the MOH to the districts. A sufficient number of copies of the facilitators' guide, participants' guide and transparency sets were printed for all 72 districts in the country. The MIP Committee organized orientation workshops for each of Zambia's nine provinces, inviting all 72 District Health Management Teams (DHMTs), and then provided the DHMTs with copies of the orientation package they could use to orient all of the health workers in their districts. Orientation packages were also provided to all health training institutions, to be incorporated into pre-service training programs for nurses, doctors and paramedics, and key faculty were included in the provincial orientation workshops.

The Committee also incorporated the same MIP information and guidelines into a maternity counseling kit, being developed to support focused ANC, and into the PMTCT policy, guidelines and training materials.

As a result of this work, the new MIP policies had been translated into guidelines and disseminated to the entire country in a period of approximately six months. With one-time antenatal attendance at more than 90% and more than 70% of women attending four or more antenatal visits, spot checks showed that nearly 70% of eligible women were getting at least the first dose of IPTp. In addition, ITN programs targeting ANC clinics began to roll out, although they were dependent on donor funding to provide adequate numbers of subsidized nets and requisite support for logistics and management.

Lessons learned include:

- A small but well selected and broadly representative working group can make rapid progress on translating policy into guidelines and

spearheading their dissemination, utilizing broader stakeholder input and consensus building activities selectively.

- Integration of vertical guidelines for a component of a service, such as those for MIP, is critical because the success of implementation in the long term relies on it becoming a routine part of the broader service, in this case of routine ANC services.
- Active dissemination of new policies and guidelines is critical, and the dissemination activities must reach the end users. A stakeholders' meeting in the capital or a mass mailing of printed materials and documents does not often result in the rapid and accurate adoption of new practices.
- M&E tools and systems are critical to monitoring the implementation of new policies and guidelines. Unfortunately, in Zambia, the inclusion of the tools in the orientation package was not sufficient, as overburdened health workers and DHMTs did not adequately implement their use. This was probably due not only to their large caseloads, but also to a form that was too complicated and a lag time between orientation and receipt of reporting materials. There is a constant tension in the MIS system of not wanting to overload the health care providers and facilities with vertical reporting; however, for new programs, such reporting is an essential requirement, at least until the programs are well-established.

RESOURCES FOR SECTION 2-1

World Health Organization (WHO). 2006a. *Guidelines for the Treatment of Malaria*. WHO: Geneva. WHO/HTM/MAL/2006.1108.

World Health Organization. 2006b. *Recommendations on the Use of Sulfadoxine-Pyrimethamine (SP) for Intermittent Preventive Treatment during Pregnancy (IPTp) in Areas of Moderate to High Resistance to SP in the African Region.*WHO Regional Office for Africa: Brazzaville. At: http://afro.who.int/malaria/publications/who_sp_statement.pdf.

World Health Organization (WHO). 2003. *Pregnancy, Childbirth, Postpartum and Newborn Care: A Guide for Essential Practice*. WHO: Geneva.

SECTION 2-2

COMMODITIES

2-2.1 ENSURE APPROPRIATE PHARMACEUTICAL MANAGEMENT FOR PREVENTING AND TREATING MALARIA IN PREGNANCY[8]

The availability, appropriate management and rational use of medicines are critical to successfully prevent and treat MIP and require:

- A timely decision by the pregnant woman to use ANC where IPTp will be given;
- A timely decision by the pregnant woman to seek treatment, based on the recognition of danger signs or symptoms of malaria or anemia;
- Appropriate diagnosis and treatment of malaria and appropriate prescribing of medicines for IPTp by the provider;
- The availability and accessibility of appropriate medicines;
- The acquisition of the correct medicines in the appropriate amounts;
- The use of the medicines according to an appropriate regimen (dose, frequency, duration); and
- Timely and appropriate follow-up, particularly if treatment failure occurs, and timely referral to the right source for appropriate additional care.

This section focuses on the fourth, fifth and sixth points listed above. These elements incorporate the mechanisms and processes needed to ensure that the right medicines reach service delivery points so that pregnant women can have access to them. In addition, these elements help to ensure that the medicine is used appropriately, according to the recommendations of the standard treatment guidelines. Finally, they include all of the processes needed to support implementation including training, appropriate management and supervision.

This section assumes that appropriate medicines for prevention and treatment of MIP have been selected using evidence-based methodologies and that appropriate methods for the diagnosis of malaria have been selected and implemented.

[8] Section 2-2.1 prepared by Rima Shretta, RPM Plus Program/Management Sciences for Health.

Medicines for the prevention and treatment of MIP

1. Prevention/IPTp
   a. Sulfadoxine-pyrimethamine
2. Treatment/Case Management
   a. ACTs: Recommended in the second and third trimesters
   b. Quinine: Recommended in the first trimester

Key Components of Pharmaceutical Management for Preventing and Treating MIP

The key components for ensuring appropriate pharmaceutical management for delivering medicines to prevent and treat MIP and anemia can be summarized according to the following framework:

- Financing (For broader financing considerations, see Section 4.)
- Coordination
- Regulation issues:
  - Review drug regulations to ensure that IPTp for prevention and medicines for treatment of malaria and anemia are available at all ANC clinics and at the lowest level of care where pregnant women access prevention and treatment.
  - Review drug regulations to ensure that the efficacy of medicines for **prevention** (i.e., IPTp) is not compromised through use for **treatment**, in either public or private sectors.
- Incorporation of the medicines into Essential Medicines Lists (EML), Standard Treatment Guidelines (STGs), ANC guidelines and materials and other relevant SDGs; dissemination of these materials to health workers through in-service and pre-service training and IEC for the community
- Management of medicine supply:
  - Forecasting of demand and quantification
  - Procurement
  - Distribution
  - Inventory management
- Quality assurance mechanisms:
  - Pharmacovigilance
  - Product quality surveillance
  - Quality control at medicine registration and at receipt
- Rational medicine use:
  - Prescription
  - Dispensing
  - Adherence

- M&E:
  - Of all the components described above

N.B. The mechanisms for implementing each of these components may differ according to whether the medicine is for the prevention or treatment of MIP and according to the actual medicine being used.

ENSURING APPROPRIATE PHARMACEUTICAL MANAGEMENT FOR PREVENTING AND TREATING MALARIA IN PREGNANCY			
KEY ACTIONS	**RESPONSIBLE**	**TIMELINE**	**STATUS**
Financing ● Develop/review budget for implementation. ● Identify potential national-level resources. ● Develop a strategy for accessing funds and identify commitments from departments within MOH and from donors. ● Evaluate cost-sharing and exemption mechanisms (exemption from paying fees) and develop methods for improving equity.			
Coordination ● Ensure effective coordination for implementation of IPTp and malaria case management policies for pregnant women through a mechanism or structure that incorporates all of the stakeholders involved in program implementation. ● The Divisions of Malaria Control and Reproductive Health should be responsible for planning and coordinating activities for the prevention of MIP and case management.			
Regulation ● Involve Drug Regulatory Authority early in the process. ● Ensure that SP is registered for IPTp with the appropriate drug regulatory authority. ● Ensure that the recommended medicines for case management of uncomplicated and severe MIP and the treatment of anemia are registered. ● Ensure that regulations pertaining to dispensing SP and to the prescribing and dispensing of recommended treatments for malaria and anemia are consistent with the adopted policy. ● Ensure that regulations pertaining to the distribution and sales of malaria drugs are consistent with the adopted policy ● Ensure that regulatory status of SP for IPTp allows use at front-line ANC facilities. – Ensure that regulatory status of ACTs and other treatments for malaria and anemia allows for use at front-line ANC facilities. – Ensure regulation of medicines for IPTp outside of ANC clinics to preserve efficacy of the medicines.			

ENSURING APPROPRIATE PHARMACEUTICAL MANAGEMENT FOR PREVENTING AND TREATING MALARIA IN PREGNANCY			
KEY ACTIONS	**RESPONSIBLE**	**TIMELINE**	**STATUS**
● Evaluate whether regulatory requirements may have a negative impact on implementation of the MIP interventions, and if so, establish mechanisms to alleviate this. ● Promulgate laws and regulations for appropriate procurement, distribution, prescribing and dispensing of the medicines and ensure that they are consistent with the adopted policy **(see Section 2-1).**			
Incorporate medicines into Essential Medicines Lists (EMLs), STGs, ANC guidelines and materials and other relevant SDGs; disseminate these materials to health workers through in-service and pre-service training ● Determine which guidelines should be revised. ● Determine the process for revision and the groups involved (include malaria control, reproductive health, IMCI programs, National Drugs and Therapeutics Committee, Drug Regulatory Authority, as well as other relevant stakeholders). ● Determine whether new guidelines need to be published or an addendum made to the existing guidelines. They should include information on: – IPTp – Case management of uncomplicated (first and second line treatments) and severe malaria in the 1st trimester – Case management of uncomplicated (first and second line) and severe malaria in the second and third trimesters – Diagnosis (use of microscopy, clinical diagnosis) ● Field-test and publish revised guidelines/EML and/or addendum. ● Revise pre-service education and in-service training curricula to incorporate new guidelines. ● Develop/review plan for training health workers and develop training materials. ● Convene training workshops for health workers soon after procurement of the medicines on pharmaceutical management, rational medicine use and the implementation of the STGs and carry out a cascade training (see Resources for Section 2-2.1). ● Develop mechanisms for adequate supervision of health workers. (See **Sections 2-1, 2-3, 2-4**)			

ENSURING APPROPRIATE PHARMACEUTICAL MANAGEMENT FOR PREVENTING AND TREATING MALARIA IN PREGNANCY			
KEY ACTIONS	**RESPONSIBLE**	**TIMELINE**	**STATUS**
IEC for the community ● Develop/review strategies for community involvement and coordinate with IEC/behavior change communication strategy to help ensure that pregnant women access ANC for prevention and treatment in a timely manner. ● Ensure that IEC/behavior change communication messages target both the private and public sectors as well as communities (closely correlate this with product availability). (See **Section 2-5**)			
Manage medicine supply: Forecasting of demand and quantification ● Compile the list of medicines and required commodities to be quantified. ● Obtain consumption data and/or morbidity data from the field. If using consumption data, use data from the most recent 12 months that are available. Depending on the quality of the data available, this can be done nationally, per district or per region or using model facilities that are representative of all facilities in an area. ● Use these data to calculate potential consumption of IPTp and medicines for case management allowing for some buffer stock. ● Calculate potential consumption. ● Use morbidity data if new policy and consumption data are not available. However, take steps to develop systems for monitoring of consumption to enable more accurate forecasting in the future. ● Monitor consumption to ensure that compiled forecasts are accurate and make adjustments accordingly. ● Ensure that forecasts for parallel procurement efforts of the MOH and grants (including the Global Fund to Fight AIDS, Tuberculosis and Malaria) are harmonized to avoid duplication and overstocking. ● Adjust quantities calculated with the resources available.			

ENSURING APPROPRIATE PHARMACEUTICAL MANAGEMENT FOR PREVENTING AND TREATING MALARIA IN PREGNANCY			
KEY ACTIONS	**RESPONSIBLE**	**TIMELINE**	**STATUS**
Manage medicine supply: Procurement ● Develop a procurement plan for the commodities needed. This should outline the products to be procured, the roles and responsibilities of the various stakeholders involved in the process, procurement methods and procedures, quality assurance, procurement M&E, etc. ● Ensure that procurement/tender committee is in place and includes the necessary stakeholders. ● Review current procurement procedures, including efficiency and transparency, and identify weaknesses; develop mechanisms to address weaknesses. ● Select the most appropriate procurement method for the medicines needed. ● Identify appropriate source/s that can provide good quality medicines for IPTp, case management and anemia. ● Develop criteria for supplier (see MSH and WHO 1997). ● Identify source of technical assistance and obtain the technical assistance as needed. ● Develop tender documents. ● Initiate and manage procurement.			
● Specify delivery schedules (important to have staggered deliveries for ACTs if used for treatment in second and third trimesters because of their short shelf-life). (For a sample procurement plan, see http://www.theglobalfund.org/en/about/procurement/guides/.)			
Manage medicine supply: Distribution ● Develop a detailed distribution plan specifying amounts of medicine per district/health facility (for IPTp, case management and anemia), storage and transport issues. ● Develop a plan for phasing out of old medicines (e.g., chloroquine for chemoprophylaxis or other medicine previously used for treatment). ● Review/develop distribution systems to allow for coordination between the public and private sectors. ● Develop/review strategies to avoid leakage of supplies from the public sector to the private sector. ● Develop/review storage capacity and conditions. For ACTs, ensure that there is "cool" storage available at the central and peripheral stores. Note that blister-packed ACTs are more bulky than SP and other medicines stored in "loose" containers. ● Develop/review human capacity for efficient implementation of distribution plan and supervision.			

ENSURING APPROPRIATE PHARMACEUTICAL MANAGEMENT FOR PREVENTING AND TREATING MALARIA IN PREGNANCY			
KEY ACTIONS	**RESPONSIBLE**	**TIMELINE**	**STATUS**
● Develop/review transportation system. ● Develop/review redistribution systems and systems to remove expired stocks. ● Develop/review systems to monitor efficiency of distribution system and redistribution mechanisms.			
Manage medicine supply: Inventory management ● Review/develop inventory management systems to improve the management of the drugs in the peripheral health facilities (assess the current system): – Develop appropriate mechanisms to ensure that inventories are regularly updated and that staff are adequately trained in inventory management. – Introduce appropriate intervention/s as necessary. ● Ensure regular and frequent inventory checks, particularly with introduction of new products. ● Develop/review security measures to prevent theft of stored products.			
● Develop/review systems to ensure management of the shelf life of products and develop/review systems for dealing with expired products.			
Quality assurance mechanisms ● Develop/review system for monitoring of adverse events (particularly important for new products, e.g., ACTs used in the first trimester). ● Develop/review systems for quality assurance during drug registration and procurement. ● Establish mechanism to coordinate the various surveillance systems—adverse drug reaction, product quality, effectiveness, etc. ● Develop/review plan for quality surveillance of the product post-marketing; ensure that samples will be regularly tested. ● Develop/review system for product quality testing during receipt of goods and at various ports of entry.			
Rational medicine use ● Ensure appropriate prescribing and dispensing. ● Develop systems to encourage adherence at the patient level.			

ENSURING APPROPRIATE PHARMACEUTICAL MANAGEMENT FOR PREVENTING AND TREATING MALARIA IN PREGNANCY			
KEY ACTIONS	**RESPONSIBLE**	**TIMELINE**	**STATUS**
Monitoring and evaluation ● Define program milestones (indicators) to measure the steps above within the overall malaria M&E framework. ● Identify data needs. ● Develop/adapt and implement information systems. ● Identify and address human and information technology resource needs. ● Develop schedule for M&E activities. ● Develop systems for supervision. (see **Section 2-6**)			

KEY ISSUES

- Pharmaceutical management is cross-cutting among all the essential components for implementing programs and must be considered at all the steps during the implementation process.
- Ensure that all medicines/vaccines/commodities (iron/folate, tetanus toxoid) necessary in the provision of ANC are available in sufficient quantity, not just those for malaria prevention and treatment.
- The "key actions" listed for ensuring pharmaceutical management do not necessarily occur in a step-wise fashion. Each of these steps/actions is interconnected and cannot be thought about in isolation. Careful planning is required to ensure that processes that impact on one another have been considered in advance.
- Experience from countries that have undergone a policy change process has shown that the development of technical committees and working groups charged with particular aspects of implementation including pharmaceutical management has been advantageous. It is important to ensure that these committees are broadly representative and multidisciplinary.
- To be effective, these processes must involve a variety of stakeholders. These stakeholders range from malaria control to reproductive health to IMCI programs, national drug regulatory authorities, central medical stores, essential drugs and/or pharmacy departments or programs within MOHs, national laboratory services, and other programs, as well as the community and private sector.
- Countries that opt for ACTs for case management of malaria during the second and third trimesters of pregnancy must also take into consideration the unique nature of these medicines, such as their short shelf life and temperature sensitivity, which may in turn affect procurement, distribution and storage of these products.
- As countries adopt ACTs, they need to ensure that SP is available at ANC for the prevention of MIP.

- Women who are HIV-infected and are taking cotrimoxazole should not take SP.
- Procurement and other processes for the management of malaria medicines and supplies should be integrated into national essential medicines supply services.
- The private sector plays a key role in providing services to pregnant women and must also be involved in policy development and implementation. Interventions must occur to build capacity in this sector for case management and prevention of MIP.

COUNTRY EXAMPLE: GHANA

Background

In May 2003, the Ghana Health Service (GHS) developed national guidelines for IPTp to prevent MIP. The guidelines recommended that at least two doses of SP be given to pregnant women a month apart after quickening, during routinely scheduled ANC visits. To phase in IPTp as an intervention, the GHS initially proposed to provide SP to 20 districts covered by Global Fund resources. To ensure that SP would be available to all ANC clinics within the proposed 20 districts, the GHS asked RPM Plus to carry out a quantification[9] exercise using a combination of methods, to assist in developing models for the government to use in quantifying future SP needs and to assess some of the supply chain management issues around the provision of IPTp. The objective was to facilitate the procurement of adequate supplies of SP and to develop appropriate models for use in quantification of SP as IPTp is scaled up in Ghana.

A variety of methods based on morbidity and population data were used to estimate SP requirements. A joint decision was made to obtain CQ consumption data for comparison and an attempt was made to obtain SP consumption data. A 12-month period, January–December 2002, was covered for collecting qualitative and quantitative data on CQ and SP consumption, as well as for morbidity data in selected ANC facilities. For a better projection of needs and more representative analysis, CQ and SP procurements in 2001 were also taken into consideration. In addition to the estimation of needs, observations were made on the supply chain management system for SP.

Key Findings

General initial observations determined that there was high awareness of the need for malaria prophylaxis in pregnancy among respondents interviewed at all levels. However, most health personnel interviewed were not aware of the IPTp policy that had been in place for a little over

[9] Quantification involves estimating the quantities of specific medicine and commodity needs for procurement and associated financial requirements to purchase the supplies.

two months. Although ANC documentation was very good, stock management records were not readily available and there was an inadequate flow of information on medicine management within the various levels of the public health care system.

The quantification exercise found a major limitation to the use of the CQ consumption data for quantification of SP for IPTp in Ghana. This limitation was that at all levels—central, (national), regional, district and facility—CQ consumption could not be disaggregated according to curative use versus prophylactic use for MIP. In quantification, reliance on inaccurate data is not ideal; therefore, CQ consumption was **not** an appropriate method for the quantification of SP for IPTp in Ghana at this time.

The needs estimation determined the quantity of tablets required yearly for a period of four years. The cost for the first year of stock was estimated at US$ 39,782.89. To arrive at the actual quantities to procure immediately, other factors such as the procurement lead time, stock on hand, pipeline status, safety stock requirements and the procurement period were considered.

However, because the IPTp program was new and there was no stock on hand or pipeline status for SP, a recommendation was made to procure the total requirements for the first two years of the program, and then to review consumption information after six months of operation to determine subsequent procurement figures. Therefore, the quantity to procure immediately was calculated to be 1,565,645 tablets of SP and this recommendation was made to the GHS.

Challenges to the Implementation of SP for IPTp and Estimation of Needs

- Insufficient awareness among health care providers of the policy change from chemoprophylaxis with CQ to IPTp with SP
- Poor inventory management records
- Poor medicine management information flow at all levels of the supply chain
- Lack of data on consumption for treatment vs. prevention; therefore, consumption data were not suitable for estimating need for SP

Recommendations

The following recommendations were made to the GHS:

- MOH to procure total requirements for 2004 and 2005 (i.e., 1,565,645 tablets) immediately through the Procurement Unit.
- The cost of the recommended procurement quantity was $80,474.17, which is within the National Competitive Bidding threshold for Ghana.

- Procurement should be conducted by the MOH Procurement Unit, preferably through a limited national tender addressed to only local manufacturers[10]of SP approved by the Ghana national drug authority (Food and Drugs Board). This will ensure a shorter lead time and allow MOH to have better control over the quality of the product.
- Procurement specifications should include pre-packing the SP into blister packs of three tablets each (one dose) and branding or labeling of the packages to distinguish them from other SP packages on the Ghanaian market.
- The consumption of SP for IPTp should be reviewed six months after the start of implementation, and the results obtained should be used to revise the current projections.
- The Food and Drugs Board should be involved in the determination of specifications and quality assurance evaluation of the firms to be invited for the tender. Ideally, the total quality assurance systems of each of the firms must be thoroughly evaluated as part of the assessment process.
- The pharmaceutical management systems for the ordering, storage, information management and monitoring of SP use needed immediate strengthening to prevent misuse and pilfering.

Lessons Learned

A major lesson learned from this exercise was that collaboration with the appropriate departments involved in making SP available, namely the National Malaria Control Program, the Reproductive Health Unit, Procurement Unit and Central Medical Stores was very beneficial to the quantification process. Many assumptions have to be made in the context of quantification, and the development of these assumptions can be made only when all relevant partners work together.

Summary

As a result of the quantification exercise, supply chain management assessment and the recommendations made, the GHS is using the provided methodology for procurements of SP for IPTp. Interventions to address the issues of inventory management have been implemented.
While the morbidity method was the most appropriate in estimating the needs of SP for IPTp quantities, it was important to continue to monitor the consumption of SP to refine the estimates needed. The GHS is continuing to monitor the consumption of SP and other products for malaria treatment.

The GHS is continuing to address the issues around strengthening the pharmaceutical management system.

[10] Data available at the Ghana Food and Drug Board indicate that there is adequate installed manufacturing capacity in-country for SP.

RESOURCES FOR SECTION 2-2.1

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SECTION 2-2.2

ENSURE DISTRIBUTION OF INSECTICIDE-TREATED NETS FOR PREVENTION AND CONTROL OF MALARIA IN PREGNANCY[11]

Ensuring access to affordable insecticide-treated nets (ITNs) and promoting their nightly use are critical components of any program intending to combat MIP. ITNs reduce anemia and clinical malaria in the pregnant woman, and have positive effects on pregnancy outcomes by reducing placental malaria, low birth weight, miscarriage and stillbirth.[12] Furthermore, ITNs provide continued benefits after pregnancy by protecting the vulnerable newly-delivered mother and her infant, as well as other family members.

One type of ITN is a regular mosquito bed net that has been soaked in a safe insecticide. Traditionally, ordinary nets were treated every six to twelve months depending on the insecticide, but sustaining frequent re-treatment poses financial, logistical and human behavior challenges. Today the preferred type of ITN is a long-lasting insecticide-treated net (LLIN)—a net treated during production in such a way that the insecticide lasts for the life of the net, making re-treatment unnecessary. These nets often have been pre-treated in the factory. Programs should distribute only LLINs approved by the WHO Pesticide Evaluation Scheme (WHOPES). For more information on approved LLINS, visit http://www.who.int/whopes/en/. Where nets other than LLINs are used, the program will need to plan for access to re-treatment kits or services.

The key elements or steps in provision of ITNs/LLINs to prevent and control MIP are:

- Review or formulate ITN/LLIN policy with special attention to needs of pregnant women.
- Estimate the need for ITNs/LLINs to prevent MIP.
- Secure finances for the procurement of ITNs/LLINs.
- Procure adequate supplies of ITNs/LLINs.
- Design a distribution system to ensure that adequate supplies of nets reach communities.
- Determine the mode of delivery of the ITNs/LLINs to pregnant women.

[11] Section 2-2.2 prepared by Kwame Asamoa and Annett Cotte, CDC; Carol Baume, the Academy for Educational Development; and William Brieger, Jhpiego.
[12] Gamble C, Ekwaru JP and ter Kuile FO. 2006. Insecticide-treated nets for preventing malaria in pregnancy. *Cochrane Database Syst Rev*. 19 April.

- Encourage and educate women to use ITNs/LLINs during pregnancy.
- Monitor the process from procurement to distribution through use.
- Maintain insecticide strength and condition of the net (e.g., prevent or repair holes, tears).

EDUCATION AND COUNSELING

As discussed in the Introduction, ANC clinics are the platform for provision of MIP services, and offer an ideal opportunity to deliver ITNs/LLINs in a setting where the total needs of the pregnant woman can be monitored and met. ANC staff can provide counseling and health education to help create and increase awareness about MIP and the benefits of adhering to regular use of ITNs/LLINs during pregnancy. Women receiving a net, and their families, should be counseled on the importance of preventing malaria, correct net use, how to hang a net and the importance of using a net every night. Some programs provide help in hanging the net for the woman and follow up to ensure nightly usage. Monitoring is needed to ensure that the nets are being used correctly.

Regardless of the mechanism used to get ITNs to pregnant women, consistent and correct use of treated nets will need to be promoted. Even when a net is owned, it is not always used. In some places, pregnant women are the least likely to sleep under ITNs because of fears about the safety of the insecticide. In Zambia, for example, in 2000, concern about the safety of the insecticide was the most frequently mentioned disadvantage for a pregnant woman sleeping under an ITN, and pregnant women were less likely to sleep under a net than any other family member. Through promotion, these fears were overcome, and by 2004, levels of concern had greatly diminished, and pregnant women had become the family members most likely to sleep under a net, along with infants.[13]

Even rapid and inexpensive formative research is helpful in identifying barriers to ITN use by pregnant women. Then ANC counseling can be designed to fill in knowledge gaps, overcome negative perceptions and provide motivation for ITN use. At a minimum, counseling should include the following points:

- A pregnant woman (and children under five) should sleep under a treated net every night, *all year round*, even when there are few mosquitoes. (Ideally, all women of reproductive age should sleep under an ITN nightly, since women do not know when they will become pregnant, and an ITN should be in use from conception.)

[13] NetMark Project, Academy for Educational Development (AED). 2005. *NetMark 2004 Survey on Insecticide-Treated Nets (ITNs) in Zambia.* AED: Washington, D.C. At: www.netmarkafrica.org/research.

- Treated nets are completely safe for pregnant women and the unborn child. Getting malaria is very dangerous for a pregnant woman and unborn child.
- Mother and child should continue sleeping under the net after the child is born.

The health care provider should be sure the woman understands how to obtain a treated net. Counseling might also include information on hanging the net, if local structures present challenges to hanging. If the nets are not LLINs, information about net re-treatment should also be discussed.

Ideally, interpersonal counseling would reinforce and be coordinated with messages from the mass media.

FORECASTING, PROCUREMENT AND DISTRIBUTION

Another major component of any ITN/LLIN program is the accurate and timely quantification of nets needed as well as timely procurement and distribution of nets to vulnerable populations such as pregnant women. This is known as forecasting need. Forecasting ensures that an adequate number of LLINs will be available when pregnant women attend ANC for the first time. Forecasting requires both census data to estimate the number of pregnant women in a district as well as ANC utilization records. The proportion of pregnant women who attend ANC varies across Africa from under 50% to over 90%. There are even large variations within some countries. An MIP control program that wants to reach a majority of pregnant women will need strategies that include public, private and NGO health facilities, as well as community mobilization to increase ANC attendance.

While provision of LLINs through ANC is the ideal method for reaching pregnant women, the reality is that multiple distribution channels may exist in a country or a community. Examples include campaigns (often linked with child immunization), vouchers, social marketing and even commercial sales. Management of ITNs/LLINs is often based within the Disease Control section of a MOH or Local Government Health Department, not within the Maternal and Child Health or Reproductive Health services. This means that maternal and child health/RH managers need to negotiate with those in charge of ITN programs to ensure that adequate supplies are available for ANC clinics. M&E is necessary to identify potential gaps with the chosen distribution mechanism and to assess knowledge, attitudes and practices.

ENSURE DISTRIBUTION OF INSECTICIDE-TREATED NETS FOR PREVENTION AND CONTROL OF MALARIA IN PREGNANCY			
KEY ACTIONS	**RESPONSIBLE**	**TIMELINE**	**STATUS**
Identify technical committee to draft ITN/LLIN guidelines based on current national MIP policy (Note: this committee can be a subcommittee of the SDG Technical Committee [see Section 2-1]). This committee should consider the design of a strategy to transition from regular ITNs to LLINs, distribution mechanism (i.e., mass campaign, free distribution at ANC, voucher system, combined distribution), coordination between private and public sector, procurement plan including criteria for supplier selection and identification of most appropriate procurement method and source, inventory management and M&E. Committee members can/should include: ● MOH decision-makers ● Malaria and RH representatives ● Entomologists and vectors control experts (from MOH, universities and other relevant institutions) ● Representatives from ITN/LLIN and insecticide manufacturers and distributors ● Representatives of professional associations (e.g., midwives, physicians, pharmacists, etc.) ● NGOs and faith-based organizations (FBOs) concerned with ITN/LLIN procurement and distribution ● Bilateral and multilateral organizations ● Community health workers (leader)			
Conduct an assessment to determine in-country capabilities for ITN implementation: ● Government ● Private/commercial sector ● NGOs ● Who is responsible for warehousing, inventory management and distribution of ITNs/LLINs ● In-country capacity for M&E (i.e., amount and quality of insecticides in ITNs/LLINs, re-treatment, proper usage, monitoring of ITN/LLINs to estimate their remaining useful life)			
Conduct an assessment to determine current status of ITN implementation: ● What is the national policy: ITNs vs. LLINs, free distribution, subsidies, commercial marketing ● What distribution mechanisms are in place: – Focused/immunization campaigns: National immunization days, measles campaigns, micronutrient campaigns, etc. – Routine distribution: Extended program of immunization, ANC, etc. – Size and strength of commercial market			

ENSURE DISTRIBUTION OF INSECTICIDE-TREATED NETS FOR PREVENTION AND CONTROL OF MALARIA IN PREGNANCY			
KEY ACTIONS	**RESPONSIBLE**	**TIMELINE**	**STATUS**
● What is the policy on re-treatment of nets? Is it implemented and monitored? ● Who is purchasing ITNs/LLINs? ● What is the procurement mechanism? ● Taxes and tariffs on ITNs/LLINs Unmet needs, anticipated barriers, challenges and opportunities related to ITNs/LLINs			
Obtain data on ITN coverage, ownership and use among pregnant women (national, district and community levels): ● Provider knowledge and practices concerning ITNs/LLINs ● ITNs/LLINs as part of the MIP package ● ITN/LLIN availability nationwide ● ITN/LLIN distribution ● ITN/LLIN usage ● Client and community knowledge and practices ● Barriers and challenges			
Develop ITN components for MIP SDGs and training materials (see Section 2-1). ITN material should include detailed information on counseling about the use/provision of ITNs (access through ANC and/or other mechanisms).			
Develop plan for ITN/LLIN procurement and inventory management: ● Procure WHOPES-approved LLINs rather than regular ITNs. ● If regular ITNs are still being used and in circulation, plan for re-treatment (i.e., give away re-treatment kits, provide services in health facility, etc.). ● Determine the most appropriate procurement method. ● Develop criteria for supplier selection (i.e., WHOPES-approved LLINs). ● Develop inventory management systems and/or review those systems already in place (develop/implement mechanisms to ensure that inventories are regularly updated).			
Distribute guidelines and conduct training for health care providers (ITNs/LLINs should be part of the overall MIP training) and/or community leaders (see Sections 2-4 and 2-5). ● Provide accurate, up-to-date information on the benefits of ITNs/LLINs during pregnancy. ● Provide information on correct use and re-treatment.			
Plan for distribution mechanism of ITNs/LLINs to pregnant women; some of the following mechanisms are also applicable to children, inaccessible areas and disadvantaged populations and the general population:			

ENSURE DISTRIBUTION OF INSECTICIDE-TREATED NETS FOR PREVENTION AND CONTROL OF MALARIA IN PREGNANCY			
KEY ACTIONS	**RESPONSIBLE**	**TIMELINE**	**STATUS**
● ANC: include ITNs/LLINs (free of charge or at a subsidized cost) as a component of MIP (with the ANC card, IPTp and case management) ● Outreach programs ● Community-based ● Child Health Week ● Campaigns (i.e., mass immunization campaigns for children may capture their pregnant mothers and/or siblings) ● Commercial/private sector: subsidized (voucher system)			
Develop job aids and promotional/marketing materials: ● Distribute these materials at all levels nationwide. ● Use existing channels and events (e.g., malaria day).			
Monitor and evaluate ITN coverage and use during pregnancy (see Section 2-6): ● Conduct M&E activities at regular intervals to evaluate the program(s).			
Hold national advocacy meeting to disseminate M&E findings and make recommendations to: ● Politicians ● Professional associations ● Pre-service institutions ● Health care providers (government, NGOs and private practitioners) ● Media ● Community			

KEY ISSUES

- An important issue concerning ITNs is their method of fabrication. WHOPES-approved LLINs have become more readily available and should be the primary choice of any MIP program. However, conventional ITNs are still being distributed and used in many countries. Therefore, re-treatment kits must be made available for the general population until the transition from ITNs to LLINs is complete.
- The **Key Actions** listed above for ITN/LLIN procurement, training and distribution do not always or necessarily occur in a step-wise fashion.
- It is essential that the technical committee responsible for drafting the ITN/LLIN guidelines is broadly representative and includes members from the public and private health care sectors to help ensure that these guidelines are integrated at all levels.
- Generally, ITN/LLIN and MIP guidelines are developed as separate protocols because they involve different teams, expertise and

resources. However, it is critical that entomologists and vector control experts work together with the malaria control and RH programs to ensure immediate integration of ITNs/LLINs with MIP services.

- Procurement/quantification of ITNs/LLINs nationally should follow a specified model. For example, estimate the number of expected pregnancy per year (many of these data are available through nationally representative surveys) or use ANC attendance data and procure this quantity of nets in addition to the ITNs/LLINs designated for children under five.
- The distribution of ITNs/LLINs poses another major issue. Ideally, ITNs/LLINs should be part of the regular MIP package and given to pregnant women free of charge. Some countries have used subsidized voucher systems to distribute ITNs/LLINs to vulnerable populations such as pregnant women and children under five year of age. Essentially it is the responsibility of the National Malaria Control Program to identify which mechanism works best in their particular setting. Furthermore, delivery of ITNs/LLINs from the manufacturer/distributor is often to the national or, at best, district level. Moving ITNs/LLINs to the health facilities, ANC clinics and village shops and keeping them in stock are problematic and need support. The logistics chain serving the end user is often weak, resulting in stock-outs or accumulations at delivery points.
- The timing and frequency of ANC registration and attendance are key issues to address in planning for LLIN distribution for MIP prevention. Ideally, a woman should register for ANC as soon as she knows she is pregnant and then receive an LLIN at that first visit so that she receives maximum protection for the longest period. Several factors militate against this ideal. In many cultures it is taboo to reveal one's pregnancy early in order to protect the fetus, thus leading to relatively late ANC registration. Women need to feel safe and be assured of privacy and confidentiality during their first ANC registration. Pregnant teenagers in some settings fail to attend ANC because of stigma. Older women may feel pregnancy is "normal" or think attending the ANC clinic interferes with their work, and thus register late. A comprehensive health education program is needed to address these factors.
- ITN/LLIN usage should be monitored and evaluated on a regular basis to rapidly identify any major flaws in the procurement and distribution mechanisms as well as their effectiveness in preventing MIP. Factors that influence the effectiveness of ITNs/LLINs include knowledge, attitudes and practices of the target population as well as mosquitoes' resistance to the pesticide used for the ITNs/LLINs. There is also a definite need for a quality control step to insure the insecticidal effect of ITNs/LLINs before distribution. This step could be accomplished by involving the national drug authorities who are already testing the quality of all medications.

COUNTRY EXAMPLE: MALAWI[14]

Delivering heavily subsidized ITNs directly to pregnant women and children under five through ANC clinics in Malawi has resulted in a dramatic increase in the coverage of groups at risk for malaria and will ensure that Malawi achieves the Abuja ITN coverage targets. The "Malawi model" has delivered five million nets in the past four years at an average consumer price of USD 0.50 per net, through nearly all health facilities offering ANC services in the country.

Using data from two independent, nationwide surveys, coupled with sales data from the last five years, it is possible to estimate that net coverage of children under five increased from 8% in 2000 to 60% by December 2006. At the time of the 2004 survey, 70% of all nets had reportedly been treated with insecticide during the previous six months.

The success of ITN delivery in Malawi is based on coordinated partnership. National guidelines, which clearly define policies regarding target groups, distribution mechanisms and pricing, were developed. Commercially-priced nets targeting urban/peri-urban communities are delivered through private sector channels, while heavily subsidized ITNs targeting malaria risk groups are delivered through public sector ANC clinics. The MOH provides leadership and oversees policy formulation and implementation. UNICEF, WHO, USAID, CDC and DFID provide policy input, technical support and/or funding, and Population Services International (PSI) provides distribution, promotion, accountability and training capacity on the ground, working through existing government infrastructure.

Scaling Up

The details of the ANC model evolved over a period of two years (2000–2001) during a pilot effort in three districts. It took six months (June–December 2002) to expand the model from three districts to a nationwide program covering all 28 districts of Malawi. In that time, 60 separate one-day training courses were held during which more than 200 DHMT staff and 1,800 nurses were trained. All trained health staff received one free net.

[14] *Adapted with permission from*: PSI Malaria Control. 2005. *The Malawi ITN Delivery Model*. PSI Malaria Control: Nairobi, Kenya.

Process for Introducing the ANC Model in a New District

- Planning meeting between national- and district-level malaria partners
- Formation of district ITN committee (three DHMT members; one district level partner, where relevant; one PSI representative)
- DHMT training facilitated by PSI
- Training of all district nurses by DHMT
- Installation of a safe for secure storage of cash in each health facility
- Supply of 100–500 nets (depending on local demand) on credit to each health facility by PSI
- Establishment of routine monthly supervisory visits by at least two representatives of ITN Committee to reconcile stock with cash, resupply nets, check records and adherence to procedures, provide materials and guidance for promoting purchase and appropriate use among malaria risk groups, and answer any queries

Regulations Governing the ANC Model

- Only pregnant women and children under five (carrying a valid health passport/ANC card) are eligible for the subsidized price.
- Only one net sold for each eligible health passport.
- Receipt issued for each sale and health passport stamped with date of purchase.
- A lack of reconciliation between stock and cash at the health facility leads to immediate cessation of ITN delivery. (This step was implemented in fewer than 20 of 400 health facilities in a two-year period).

Logistics for the ANC Model

The model required the following logistical support:

- Four regional warehouses (shared with other health programs)
- Two dedicated five-ton trucks
- Six dedicated “4x4” vans
- 16 dedicated staff

Delivering ITNs through the Private Sector

Green rectangular nets, which are preferred by rural residents sleeping predominantly on mats, are being delivered at heavily subsidized prices through ANC clinics. Blue conical nets, which are preferred by urban residents sleeping predominantly on beds, are delivered through the private sector. The private sector nets are sold at full cost recovery through appropriate wholesalers and retailers throughout Malawi. This scheme ensures that the subsidy is not wasted on those who can afford to pay, and

harnesses the distribution efficiency associated with the private sector delivery channel.

Lessons Learned

- It is essential for sustainability that nurses view the program as an integral DHMT activity.
- A small fraction of revenue generated from sales is used for motivation. As a result, nurses actively promote the benefits of nets to pregnant women during consultation, which drives demand and leads to rapid coverage of risk groups.
- Instant cessation of ITN supply combined with reporting to the District Health Officer proved to be a quite adequate disincentive for theft at health facilities.
- Delivery through private and public sector channels greatly improves overall program efficiency and ensures effective targeting of the public subsidy.

Specific benefits from distributing LLINs through ANC include the following:

- Access: Antenatal clinics provide efficient and direct access to the principal malaria risk groups (pregnant women and children under five).
- Attendance: Antenatal clinic attendance, at least once during pregnancy, is above 90% in Malawi and above 70% in most of Africa.
- Distribution: Public health facilities are distributed throughout rural areas and are capable of securely storing large quantities of nets, which increases distribution efficiency.
- Promotion: The one-to-one professional consultation between nurse and mother offers an unparalleled opportunity for promoting purchase and appropriate use of ITNs.
- Targeting Subsidies: Pregnant women and children under five carry health passports, which make it easy to ensure that the subsidy is targeted to vulnerable groups.
- Accountability: Ensuring accountability is straightforward because reconciliation between stock and revenue can be done at any time at the health facility. Leakage of heavily subsidized nets to non-target groups is minimized.

RESOURCES FOR SECTION 2-2.2

Arrow KJ, Panosian C and Gelband H. 2004. *Saving Lives, Buying Time: Economics of Malaria Drugs in an Age of Resistance*. The National Academies Press: Washington, D.C.

Distribution of insecticide treated bednets during integrated nationwide immunization campaign—Togo, West Africa, December 2004. *MMWR* 7 October 2005/54 (39): 994–996.

Gamble C, Ekwaru JP and ter Kuile FO. 2006. Insecticide-treated nets for preventing malaria in pregnancy. *The Cochrane Database of Systematic Reviews.* Issue 2.

NetMark. 2004. *NetMark 2004 Survey. Insecticide Treated Nets in Nigeria, Senegal, Zambia, Ghana and Ethiopia*. At: www.netmarkafrica.org. Accessed on August 23, 2006.

NetMark Project, Academy for Educational Development (AED). 2005. *NetMark 2004 Survey on Insecticide-Treated Nets (ITNs) in Zambia.* AED: Washington, D.C. At: www.netmarkafrica.org/research.

PSI Malaria Control. 2005. *The Malawi ITN Delivery Model*. PSI Malaria Control: Nairobi.

Rhee M et al. 2005. Use of insecticide-treated nets (ITNs) following a malaria education intervention in Piron, Mali: A control trial with systematic allocation of households. *Malaria Journal* 4: 35.

Roll Back Malaria. *Scaling Up Insecticide-Treated Netting Programmes in Africa. A Strategic Framework for Coordinated National Action.* Roll Back Malaria: Geneva. At: http://www.rollbackmalaria.org/partnership/wg/wg_itn/docs/WINITN_StrategicFramework.pdf.

World Health Organization (WHO). 2004. *A Strategic Framework for Malaria Prevention and Control during Pregnancy in the African Region.* WHO: Regional Office for Africa: Brazzaville.

SECTION 2-3

USE PERFORMANCE STANDARDS TO HELP ASSURE HIGH-QUALITY MIP SERVICES

When dissemination of the MIP guidelines is complete, health care providers should be implementing the guidelines as part of their daily practice. But for this to happen, it is critical that providers be trained and motivated to follow and use the guidelines. Changing attitudes and behavior is known to be a difficult and challenging process, but it must be accomplished if health care providers' performance is to reflect the standards set out in the guidelines. Having a clear strategy for behavior change from the beginning, and then applying it consistently, is the approach most likely to lead to adherence.

Low employee motivation and morale often are identified as issues in inadequate provider performance, and can have an adverse effect on the successful implementation of MIP guidelines. Mechanisms must be in place to recognize the efforts of staff to provide high-quality care and to reinforce practices that institutionalize positive behavior change.[15] Other factors that affect provider performance are unclear job expectations; lack of performance feedback; inadequate facilities, equipment, and supplies; poor knowledge and skills; and lack of organizational support.

Use of performance standards is a practical approach for improving the quality of the health care services and addressing these performance factors. This approach focuses not on problems but on the desired level of performance and quality to be attained. Given the often limited capacity of the external supervision system in most countries, this approach seeks to build capacity at the individual and facility levels to continually assess and improve provider performance and services. This is accomplished through the use of the four steps in the performance standards process described below:

- Set standards, analyze performance and find causes of performance gaps.
- Implement interventions to address causes of performance gaps.
- Monitor and evaluate performance to measure progress.
- Recognize the achievement of the standards.

This process can be used at a national, regional or local level, for all types of health care facilities and all types of services. It is desirable to have a

[15] *Adapted from*: Johnson RH. 2001. *Implementing Global Maternal and Neonatal Health Standards of Care*. Jhpiego/MNH Program: Baltimore: MD.

national system in place to implement a performance standards activity to improve quality. However, the process may be used at any level, in a single facility or a small network of facilities. Because networking and benchmarking activities are keys to its success, it is best to work simultaneously in a number of facilities (e.g., four to seven). In the case of peripheral level facilities and for a focused intervention such as MIP, a larger number of centers can be included in the quality improvement activity.

This approach is considered a "bottom up" process that empowers facility supervisors, providers and communities by giving them standardized tools to help make informed decisions that will improve performance and quality of services. The supervisor plays a critical role in effecting change at the facility. Supervision is the process of guiding, helping, training and encouraging staff to improve their performance in order to provide high-quality services. The goal of supervision is to promote and maintain the delivery of high-quality health care services. This goal is achieved by focusing on the improvement of individual staff performance.

A supervisor is responsible for the performance of clinical staff. Supervisors are responsible for ensuring that sufficient numbers of trained staff exist to provide high-quality services, that they have the supplies and equipment they need to use their skills and that there are financial resources to buy necessary supplies. They are responsible for scheduling, maintaining relationships with the district or central level MOH, problem solving, creating an environment of teamwork, motivating staff, facilitating community outreach and the like.

Traditional approaches to supervision emphasize "inspecting" facilities and "controlling" individual performance. They focus on finding fault or errors and then reprimanding the people involved. In contrast, use of the step-by-step performance standards process focuses on:

- The goal of providing high-quality health care services
- Use of a process of continuous improvement of staff performance and quality of service
- A style of encouraging and supportive interaction with all staff and other stakeholders[16]

Key to the success of a standards-based quality assurance process is involvement of the community. It is incumbent upon the facility to understand the community's issues and include them in the quality process. There should be opportunities for community members and staff members to interact (e.g., invite community members to participate in an analysis of the causes of performance gaps). In addition, the community should be seen as an asset to the facility in its efforts to strengthen the quality of services. The community can help in many ways—volunteering to improve the clinic

[16] Garrison, K et al. 2004. *Supervising Healthcare Services: Improving the Performance of People*. Jhpiego: Baltimore, MD.

building or environment, or supporting promotional or educational activities, acquisition of specific supplies or implementation of activities at the facility. One of the most critical ways that clients and communities can participate is to ensure that services are provided according to defined performance standards and are culturally acceptable. Finally, communities can play a key role in the recognition of the achievement of standards.

This section of the *Implementation Guide* is written for the peripheral level health care facility. For information on implementing a performance standards system at a national level, see Necochea E and Bossemeyer D. 2005. *Standards-Based Management and Recognition: A Field Guide*. Jhpiego: Baltimore, MD.

KEY ACTIONS	RESPONSIBLE	TIMELINE	STATUS
Set standards, analyze performance, and find causes of performance gaps			
SDG Technical Committee (See Section 2-1) defines performance standards (the Technical Committee should be composed of members who have been updated in MIP): ● Based on national policy and SDGs, and ● With as much stakeholder input as possible (e.g., providers, supervisors, clients)			
Define objective verification criteria for each performance standard, organized as a practical checklist/performance assessment tool.			
Conduct performance analysis using performance assessment tool to identify what gaps exist between actual and desired performance: ● Which standards are being met and which are not ● Whether all verification criteria for each standard are present ● Any other details to help in identifying causes of the gap Baseline analysis results are presented quantitatively to serve as a basis for future monitoring.			
Conduct root cause analysis that asks why performance gaps exist. Gather information from as many stakeholders as possible. Common causes of poor performance include: ● Unclear job expectations ● Lack of performance feedback ● Poor motivation ● Weak management or leadership ● Deficient knowledge and skills ● Inadequate facilities, equipment or supplies ● Lack of client and community focus			

KEY ACTIONS	RESPONSIBLE	TIMELINE	STATUS
Implement interventions to address causes			
Select and design interventions to address causes of performance gaps.			
Prioritize selected interventions by considering the following criteria: ● Appropriateness. Will the intervention close the performance gap? Will it improve the quality of services? ● Economics. Is the intervention affordable and sustainable? ● Feasibility. Are systems in place to support the intervention? ● Cultural acceptability. Will the community and clients respond favorably to the intervention? ● Provider acceptability. Will providers or supervisors support the intervention?			
Begin gradually by addressing gaps that are easily closed in order to obtain quick results and motivate and empower teams.			
Develop an action plan that lists: ● All planned activities ● The date by which they will be accomplished ● The resources they will require ● The person who is responsible for carrying them out ● The methods that will be used to measure success			
Monitor and evaluate performance to measure progress (see **Section 2-6** of this guide for more information on M&E)			
Develop system of continual measurement using performance assessment tool through: ● Self-assessments conducted by individual providers of their own work ● Internal assessments implemented internally by facility staff ● External assessments implemented by persons external to the facility (e.g., facilitative supervision visits, verification assessments)			
Exchange best practices among networks of facilities (benchmarking).			
Recognize achievement of the standards			
Motivate individuals, teams and facilities through incentives, including: ● Feedback that is timely, specific, continual and interactive ● Social recognition through commendations, trophies, diplomas or celebrations ● Material recognition through monetary and in-kind rewards (e.g., performance-based budgets, opportunities for professional development, additional equipment or supplies)			

KEY ISSUES

- Use of performance standards to improve quality of services is part of the implementation continuum—it is not an isolated or optional step. The stakeholders involved in activities to improve quality are the same as those involved in defining SDGs, training activities, and M&E systems.
- The performance standards approach is designed to relieve the burden of external supervision and make quality improvement something that is done every day, as a routine part of providing MIP services. However, external supervisors play a key role in getting the process started at facilities, and this effort could add to the supervision burden initially.
- In the beginning, the performance standards approach may require a high level of external assistance. However, it is intended to be transferred quickly and completely to the local level. This transfer requires that both the facility administrator and the service provider are motivated and highly engaged to work together to improve quality.
- There has to be a "so what" at the end of the process—what did improving quality do for us? M&E activities must ensure that data collected in service statistics are tied to quality improvement activities (e.g., the number of women coming for MIP services increased after patient counseling and provider-patient interaction improved; the number of infections decreased in the health center after infection prevention practices were improved).

COUNTRY EXAMPLE: MADAGASCAR

From 2003–2005, in collaboration with the Malaria Action Coalition (MAC) and other partners, the Madagascar MOH/FP developed and adopted a national malaria policy. The main components of the policy for pregnant women are use of ITNs and, for women living in areas of stable transmission, to provide IPT with SP. The policy also includes shifting ANC from a risk-based approach to an approach focused on the woman's individual needs and promoting birth preparedness and complication readiness.

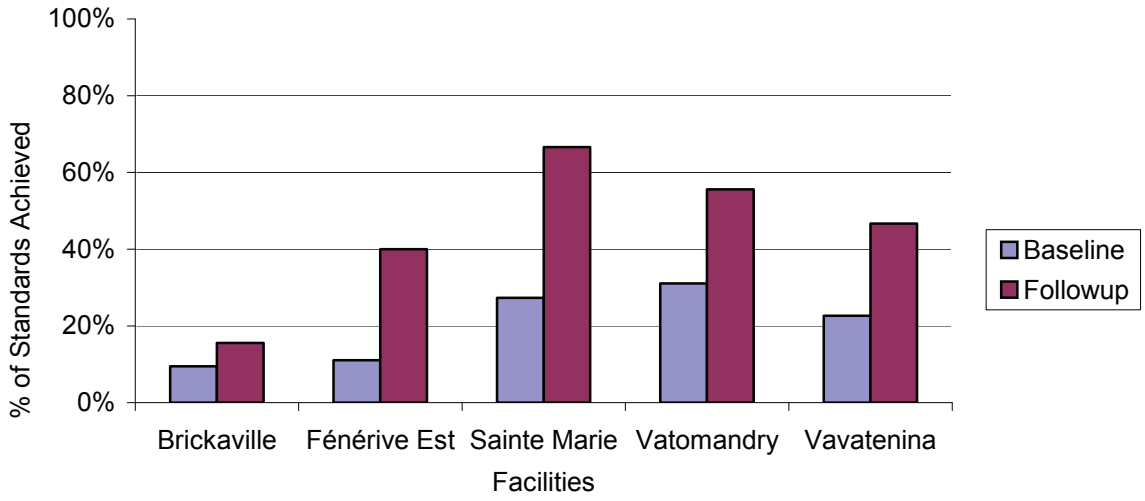
During the same period, the MOH/FP and MAC identified five model sites in a highly endemic province (Toamasina) to initiate ANC/MIP services and learn lessons for national scale-up. The initial interventions included training core trainers, developing and testing learning resource materials and training service providers. As soon as MIP services were operational, MAC introduced a performance and quality improvement (PQI) process to the health facilities. The process empowered staff to address issues of performance and quality at the health facility level and enabled the MOH/FP to measure the effectiveness of ANC/MIP training and service delivery and identify vulnerabilities in implementation of malaria policy.

The PQI process implemented in Madagascar followed the steps of the Standards-Based Management and Recognition (SBM-R) process outlined in this section. Key activities of the Madagascar experience were as follows:

- The PQI process was launched through a one-day advocacy meeting with all stakeholders (MOH/FP representatives, multilateral and bilateral partners, NGOs, service providers, academics, etc.).
- The ANC/MIP national policy and evidence-based documents were used to adapt an ANC/MIP performance assessment tool from Tanzania during a five-day workshop. This workshop also served as the first step in developing a core group of PQI facilitators, all of whom were experienced clinical trainers.
- Provider and community perspectives were incorporated within the performance assessment tool by identifying client needs and expectations during the tool's field-test.
- Facilitators conducted two-day assessments at each of the five sites and shared assessment results with service providers and administrators. Findings showed that two of the five model sites did not have SP or ITNs, and that all sites had weak ANC services.
- The initiative brought service providers and administrators from all five sites together to analyze performance gaps and develop action plans. Using a group-based format allowed participants to share experiences and build ongoing relationships.
- Discussions during the root cause analysis helped the MOH/FP redirect supplies of SP and ITNs to centers with trained providers, and stressed the need for follow-up of new services at health centers.
- To provide some motivation in action plan implementation, the MAC program assisted with training courses in infection prevention, provision of job aids, and provision of minimal supplies for the health center, such as cups for women taking SP, etc. However, because activities were designed based on local resources, very little external assistance was needed to reduce performance gaps.
- Service providers and administrators spent six months implementing their action plans before follow-up assessments by PQI facilitators. These visits were not formally scheduled; instead, every opportunity involving a visit from a supervisor or a MOH/FP representative was used to discuss the PQI process with service providers.

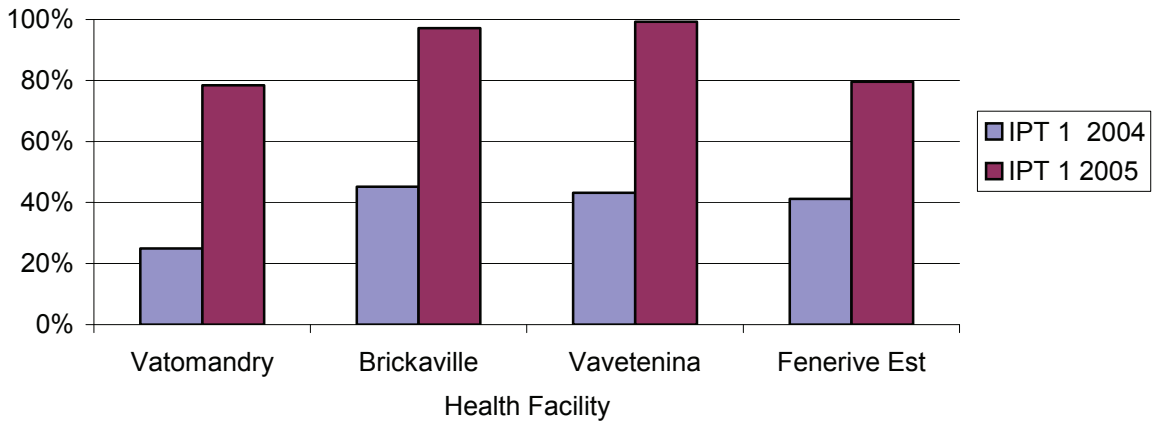
Follow-up visits by PQI facilitators six months after action plan implementation showed that the quality of ANC/MIP services at the five model sites improved substantially. Facilities improved their average overall performance score from 20% to 45% of standards achieved. Scores for each facility's baseline (July 2005) and follow-up (December 2005) assessments are provided in **Figure 2-3.1**.

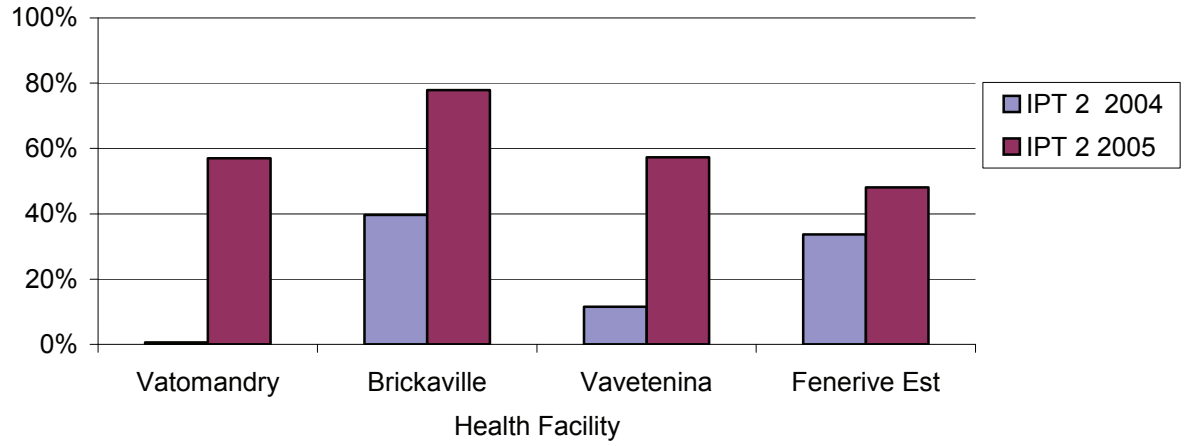
Figure 2-3.1: Madagascar FANC/MIP Baseline and Follow-up Assessments (July 2005–December 2005)



Moreover, data on IPT coverage from four of the five facilities showed that at the end of 2005, IPT coverage for both the first and second dose had dramatically increased, as illustrated in the graphs below.

IPT1 Coverage 2004–2005 for Four Model Sites





These promising results led the MOH/FP to invite the MAC program to develop desired performance standards for all aspects of malaria and to scale up the PQI process nationally. The MAC program has started to do this in partnership with USAID's bilateral project Santénet.

Lessons Learned

- Advocacy and training in the PQI process for key stakeholders at the national level is needed in order to validate and fully integrate the performance assessment tool with standard operating systems.
- The number of performance standards and verification criteria should be appropriate for the level and resources of the health facility. For example, in Madagascar one of the IP standards deals with protecting cleaning staff from dangerous infection (HIV, hepatitis B, etc.) by lining waste baskets with plastic bags. Some argue that the money used to purchase plastic bags would be better spent on other resources. To address these concerns, the program is reducing the number of performance standards and verification criteria where possible, but also educating stakeholders about the evidence basis of the standards and the need to advocate for resources and support from the community.
- Starting with program design, it is essential to consider how service delivery statistics are linked to the problem-solving and decision-making aspects of the PQI monitoring process. While the PQI process provides information on how quality has improved at the health facility level, it does not show the number of women who are benefiting from the improved services. In Madagascar, this issue is being addressed by training internal and external supervisors. The concept is that internal supervisors should use the performance assessment tool for regular monitoring and the service statistics during gap analyses and action planning. External supervisors should monitor service statistics and also review the summary results from the PQI

process. Part of the external visit should be organized to assist health care providers in solving complex gaps in service delivery.

- Partners should be involved in validation workshops so they can support scale-up of PQI in regions where they work. In these efforts, the MOH/FP should strive for better use of service statistics for problem-solving and decision-making.
- For the PQI approach to be sustainable in Madagascar, the MOH/FP must promote PQI as an official process for all areas of service delivery, not just ANC/MIP, and integrate PQI with its overall supervisory system for health facilities.

RESOURCES FOR SECTION 2-3

Garrison K et al. 2004. *Supervising Healthcare Services: Improving the Performance of People*. Jhpiego: Baltimore, MD.

Jhpiego. n.d. *Performance Improvement for Quality Reproductive Health Services*. Jhpiego: Baltimore, MD.

Johnson RH. 2001. *Implementing Global Maternal and Neonatal Health Standards of Care*. Jhpiego/MNH Program: Baltimore: MD.

Necochea E and Bossemeyer D. 2005. *Standards-Based Management and Recognition: A Field Guide*. Jhpiego: Baltimore, MD.

SECTION 2-4

BUILD HUMAN CAPACITY THROUGH TRAINING TO ENSURE IMPLEMENTATION OF MIP GUIDELINES

The desired result of any clinical training program, whether pre-service or in-service, is that providers begin to use newly acquired knowledge and skills to improve patient care. When SDGs are used to develop training programs, the skills included in the training are carefully selected as key skills called for in the guidelines and needed for improving provider performance. This allows the training to be competency-based, and thus makes the most efficient use of the time required for training.[17]

A training system[18] that supports the implementation of MIP guidelines is the result of an integrated training strategy—a strategy that addresses all sectors, cadres and levels of the health care system involved in preventing and treating malaria in pregnancy, including doctors, nurses, midwives, pharmacists and lab technicians. This integrated approach helps achieve standardization and increases collaboration between the RH and malaria control divisions and programs. In addition, it fosters a focus on women and their families and the MIP services they need rather than on the category of provider or level of the health care system.

Finally, pre-service education and in-service training programs should be based on clearly defined job descriptions and performance standards which, in turn, have been developed based on the MIP guidelines.

Ideally, MIP training should be integrated with existing RH training and should not be considered as an "extra" or special training requirement. However, because many MOHs have only recently recognized the problem of malaria during pregnancy, MIP training is often given as "vertical," "catch-up" training. In this case it is important that providers are taught how to integrate the new service(s) with the care they provide.

PRE-SERVICE EDUCATION

National training systems now recognize that the most sustainable training approach in the long term is pre-service medical, midwifery and nursing education. When MIP SDGs are used to develop pre-service curricula, students learn from the start of their careers the basic principles of

[17] Competency-based training focuses on the specific knowledge, attitudes and skills needed to carry out a procedure or activity. How the learner *performs* is emphasized rather than just what information the learner has acquired.
[18] Development of sustainable national training systems is a complex topic, and discussion of how to develop such systems, challenges and lessons learned is beyond the scope of this Guide.

guidelines-based clinical practice and are taught how to apply them. Thus, as the new guidelines for providing MIP care, performing procedures, following drug and supply standards, and educating the public about warning signs become the norm in practice, they are also incorporated with pre-service education, enabling newly graduating students to practice them accordingly. This result would be much more difficult, if not impossible, to achieve if medical, midwifery and nursing curricula were developed without reference to the MIP guidelines.

When pre-service education programs are based on competency-based clinical training principles, students graduate as qualified, proficient professionals and are able to provide all care defined by the SDGs. Thus, new skills such as those needed to provide MIP care are more easily incorporated with existing curricula. For pre-service education, MIP should be included in the RH component.

Revising pre-service curricula is a complex and lengthy process, and discussion of the process is beyond the scope of this Guide (see Schaefer 2002 in the Resources following this section).

IN-SERVICE TRAINING

Even though a shift to pre-service education is the necessary long-term solution, in-service training must still take place. Most health care professionals now in service were not trained using a guidelines-based curriculum. In-service training is therefore necessary in the short term to bring the knowledge and skill level of existing health personnel up to the standards set by the MIP guidelines. In this case, in-service is need-based training, conducted to fill an identified gap in health care providers' knowledge or skills.

In addition, motivating and supporting providers are keys to facilitating their adherence to the guidelines and providing quality MIP care. Orientation and training activities are designed to help providers achieve complete understanding of what is in the guidelines and how they should be used. This understanding encourages provider ownership—an important aspect of adherence. A sense of ownership gives providers the confidence to problem-solve and adapt their situations to provide care based on the guidelines. Concrete tools and tips that can be used by providers on a day-to-day basis also improve providers' motivation to adhere to the guidelines.[19]

[19] *Adapted from*: Johnson RH. 2001. *Implementing Global Maternal and Neonatal Health Standards of Care*. Jhpiego/MNH Program: Baltimore, MD.

In-service training can take many forms, including group-based clinical training; on-the-job (also referred to as site-based or clinic-based) training, either structured or informal; and self-paced learning.

For group-based, in-service training, a course of at least two to five days is usually adequate. The ACCESS Program has published a clinical learning package (reference manual, facilitator's guide, participant guide and training aids) for skilled providers who provide ANC services, including midwives, nurses, clinical officers and medical assistants. The workshop improves providers' knowledge, skills and attitude needed to prevent, recognize and treat MIP as they provide ANC. During this workshop, the participants complete case studies and action plans so that they can plan how to integrate MIP prevention and control with their existing ANC activities. It is recommended that one or more days be added to the basic workshop to provide guided clinical observation and practice for participants. (For additional information, see Ganges and Gomez 2007, in the Resources list at the end of this section.)

Structured on-the-job training, provided at the provider's clinical site, is most effective at sites where there is staff turnover or where large numbers of clinicians require training. Logistically, requirements for structured on-the-job training are the same as for group-based training—a clinical trainer, reference manual, trainer's manual, participant's guide and training aids.

If providers have access to a computer and reliable Internet connections, they can use the ACCESS Program's self-paced MIP tutorial. (For additional information, see Resources, ACCESS Program 2007.)

There must be a network of trainers who can deliver education and training in MIP knowledge and skills. One model is that of having a small group of master trainers at the national level who in turn train a larger group of advanced trainers who can then train an even larger group of clinical trainers at the regional and/or local levels. A parallel approach, often called "cascade training" is used for orientation workshops in which only knowledge is transferred. In the cascade approach, trainers are developed to update providers and supervisors who in turn are expected to orient their colleagues on the job.

BUILD HUMAN CAPACITY THROUGH TRAINING TO ENSURE MIP GUIDELINES IMPLEMENTATION			
KEY ACTIONS	**RESPONSIBLE**	**TIMELINE**	**STATUS**
Review and revise job descriptions based on MIP guidelines to provide performance-based learning objectives and standards.			
Review and take into consideration performance standards based on MIP guidelines when developing training (see **Section 2-3**).			
Develop in-service training strategy for providers and supervisors. ● Identify those needing training, per focused needs assessment (see **Section 2-1**). ● Identify national, regional and district level trainers for group-based and site-based training, ensuring a mix of trainers from both malaria and RH divisions. ● Develop timeline for training. ● If training will have a clinical practicum or observation component, identify clinical sites for training. ● Strengthen clinical training sites by ensuring that staff implement MIP services based on the SDGs.			
Identify existing pre-service curricula and in-service training materials requiring adaptation: ● Revise curricula and training materials to include new/revised MIP and ITN guidelines (see Sections 2-1 and 2-2.2). ● Develop/revise job aids to be consistent with learning materials and guidelines. ● Translate learning materials and job aids into local languages as needed.			
Train MIP trainers: ● MIP update ● Infection prevention update ● Clinical training skills (CTS) training course (training of trainers) ● CTS practicum (newly developed MIP trainers “practice teach” to other providers) in order to qualify as MIP trainers			
Train MIP supervisors: ● MIP (including infection prevention) update ● Training in performance improvement (See **Section 2-3**) ● Facilitative supervision training			
Train service providers: ● MIP/IP update ● Follow-up visit by trainer six weeks after training using checklist based on expected standards (see **Section 2-3**)			

BUILD HUMAN CAPACITY THROUGH TRAINING TO ENSURE MIP GUIDELINES IMPLEMENTATION			
KEY ACTIONS	**RESPONSIBLE**	**TIMELINE**	**STATUS**
Monitor and evaluate training (source: *Training Works!*): ● Determine whether learners have met learning objectives by scoring knowledge and evaluating skills as part of training. ● Improve training using information from knowledge and skill evaluations. ● Monitor and evaluate performance on the job through self-assessment, internal assessment, external supervision (see **Section 2-3**). ● Determine the effectiveness of training as an intervention to improve performance. ● Monitor number of people trained by cadre, by geographical administrative unit and/or by health facility type.			

KEY ISSUES

- While pre-service education is the most sustainable, long-term approach to building personnel capacity for MIP programs, it will not satisfy immediate, short-term needs. Targeted in-service training is needed to bring the skill levels of existing personnel up to the standards set by the guidelines. Resources, both human and financial, must be balanced accordingly so that one approach is not implemented to the exclusion of the other. Both pre-service education and in-service training are needed to build a sustainable national training system.
- The training strategy should include links to providers outside of the government system. There should be specific approaches to involve private and faith-based organization (FBO) medical practitioners who treat a substantial proportion of malaria cases (source: WHO/AFRO *Strategic Framework*).
- In all training strategies, it is essential to include follow-up visits to participants at a designated time period (often six weeks after training) to help ensure implementation of newly learned knowledge and skills. This follow-up should be the first step in a program of regular supportive supervision. Follow-up is often overlooked for the sake of rapid scale-up, leading to critical problems in the delivery of the health service. There should be a budgeted line item for follow-up of all training participants. Follow-up is an opportunity for additional coaching/mentoring of participants and should be conducted by trainers using structured performance-based checklists.
- While training is not too expensive relative to other budget items in health care, it can be a challenge to find the human and financial resources needed to conduct large-scale training programs. Generally, numerous NGOs are involved according to their areas of expertise and/or the localities in which they are working. While this may be

necessary and even desirable, all organizations conducting training should use a competency-based training approach and nationally adopted training and resource materials based on the national MIP guidelines.

- Developing new training and resource materials takes time and can be a major drain on limited resources. Therefore, it is preferable to adapt existing MIP materials rather than start "from scratch." All organizations conducting MIP training in a country ideally should use the same training materials. The MIP learning materials developed by the ACCESS Program are based on WHO standards and can easily be adapted to national protocols.

COUNTRY EXAMPLE: KENYA

Kenya used a phased approach to scale up MIP in-service training, beginning in two districts in 2002 and reaching 24 districts by 2006. Training focused on medical doctors, clinical officers, nurses and public health officers/technicians from MOH, NGO, USAID and private facilities. The public health officers/technicians are considered essential to the training efforts as they are the link between communities and facilities. There was also a large training component targeting community-owned resource persons (CORPs), including community health workers, peer youth educators, retired professionals, community-based distributors, traditional birth attendants and traditional healers. Training included follow-up visits six weeks after training. Funding for training came from a variety of sources and was implemented jointly by the Divisions of Reproductive Health and of Malaria Control. Thus, the training was inclusive and integrated through coordinated planning and funding.

Key elements of Kenya's training approach that have made it successful include:

- Comprehensiveness. The approach aims to strengthen ANC as a platform for all essential health services during pregnancy, including MIP and PMTCT; the training targeted clinicians **and** the community.
- Use of simple materials for health care providers and CORPs. The MIP orientation package included job aids, posters, and a brochure in English and Kiswahili, which were used to disseminate national guidelines and increase provider knowledge.
- Development of a cadre of national and district level trainers. With a cadre of trainers in place, especially at the district level, new providers can be trained quickly and locally.
- Inclusion of regular supportive supervision as a component of training. Supervisors are able to update service providers on new policies and address gaps in training.

Baseline and follow-up surveys in four districts showed the following progress from 2002 to 2003:

- The percentage of pregnant women receiving at least one dose of IPTp increased from 60% to 78%;
- The percentage of ANC providers receiving an update in RH and MIP increased from 28% to 53%;
- The percentage of health care providers' knowledge of three or more danger signs during pregnancy increased from 14% to 76%;
- The percentage of health care providers who discussed danger signs during pregnancy with clients increased from 17% to 47%.

Lessons learned include:

- The training plan and training packages must be developed at the central level to avoid duplication of effort and ensure consistent information. In addition, planning as a team helps solve issues that may arise during field-based program implementation. Centralized planning for training has led to joint planning by other programs. For example, the Division of RH, Division of Malaria Control and National AIDS/STDs Control Program recently worked together to develop common ANC and delivery registers. The MOH at the central level must take the lead in collaboration and avoidance of vertical programs.
- Advocacy (ensuring buy-in, meeting with key stakeholders) at **all** levels (central, regional and district) is essential to ensure engagement and support for the training plan. Equally essential is that advocacy be continual, something that is done throughout the life of the program. Advocacy is necessary to help ensure that service providers trained in MIP stay within the RH sector and not be transferred to a surgical ward, for example.
- It is necessary to resolve the policy, logistical and financial issues concerning provision of SP through ANC clinics before beginning training. In Kenya, training started before there was a clear policy on provision of SP as directly observed treatment (DOT) at ANC clinics, at no cost to the woman. While this policy is now official, it does not yet extend to FBO, NGO and private facilities. In addition, there were drug stock-outs in some districts, and some facilities did not have clean water and cups for DOT. If providers are unsure of the policy for provision of SP or if supplies and SP are not available, the momentum gained through training is lost.
- Record keeping and data collection are essential to document progress in provision of IPTp1 and IPTp2 in malaria-endemic districts—this continues to be a challenge in Kenya. The need for full and accurate record-keeping should be a component of all MIP training.

- Training should be short and concise. Often, service providers are the only skilled provider at their health facility and cannot leave for training that lasts more than a few days.
- Supportive supervision is an essential part of the training process. Heavy workloads and frequent transfers of service providers often mean that providers are not able to attend even short training courses, or that those who are trained are not available to provide MIP services. In addition, as policies change (e.g., from SP to ACT for first-line treatment of MIP), it is necessary to inform trained and non-trained service providers about the new policies. Supportive supervision helps to address this issue by addressing training gaps and reinforcing knowledge at the health facility level.

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SECTION 2-5

MOBILIZE COMMUNITIES TO TAKE ACTION TO PREVENT MALARIA IN PREGNANCY[20]

For pregnant women to use MIP services effectively, providers must offer services that meet defined standards, as described in **Section 2-3**, and communities must be mobilized to use the services. Community mobilization efforts to increase use of IPTp and ITNs occur at the community level but require support at the national, regional and district levels. Just as national RH and malaria control programs have strategies for service delivery program components, a national strategy is needed for community mobilization and involvement.

Constraints to effective use of MIP services include lack of knowledge about how malaria is transmitted and the harmful effects of malaria on maternal and newborn health; cultural beliefs and social practices, which prevent clients from seeking services; non-availability of ANC services, anti-malarial drugs and ITNs; and economic barriers. Community-specific barriers include the pregnant woman's lack of authority to make personal decisions such as seeking ANC and her lack of money for transportation; the belief that antimalarial drugs are dangerous or "too strong" for mother and baby; and fear that the ITN could choke them or that the insecticide is dangerous. These constraints will vary from one local community to the other.

Most national and regional level community mobilization strategies have addressed these constraints using mass media, interpersonal communication and counseling (IPCC) at the facility level, and advocacy.[21] These strategies have been effective for improving knowledge and creating awareness about the causes and impact of MIP and the interventions to prevent or treat the disease, but have not had an impact on service utilization. In addition, few strategies have empowered the communities to take the lead in addressing the constraints to MIP service utilization, and those that have are limited in geographic coverage.

Mobilization efforts must move beyond awareness creation and use participatory approaches to galvanize the community to take individual and collective action to increase use of MIP services by pregnant women. Evidence from recent community mobilization trials has shown that when communities are empowered, they are able to explore their own health issues, and prioritize, design, plan, implement and monitor activities to change health

[20] Section 2-5 prepared by Joseph de Graft-Johnson, ACCESS/Save the Children.

[21] The process for developing these strategies has been well documented and will not be described here. For information on designing mass media and IPCC communication strategies see O'Sullivan G.A. et al. 2003. *A Field Guide to Designing a Health Communication Strategy: A Resource for Health Communication Professionals*. For information on advocacy, refer to Armbruster D et al. 2003. *Networking for Policy Change: An Advocacy Training Manual Maternal Health Supplement.*

behaviors and increase utilization of available services (Howard-Grabman et al. 1992; Manandhar 2004). This participatory approach is known by different names; however, the steps involved are similar. This Guide will use the community action cycle (CAC) for community mobilization described in the publication *How to Mobilize Communities for Health and Social Change* (Howard-Grabman and Snetro 2003).

COMMUNITY ACTION CYCLE FOR COMMUNITY MOBILIZATION

This Guide focuses on six key actions or phases of the CAC, each of which has a series of steps needed to accomplish the action:[22]

- Prepare to mobilize
- Organize the community for action
- Explore the health issue and set priorities
- Plan together
- Act together
- Evaluate together

The first key action, **prepare to mobilize**, describes the steps a program must take before getting the community involved. The steps need not be taken in the sequence presented, and some steps may be omitted if the activity has already taken place.

Organize the community for action, the second key action, is the phase during which the community is engaged in the discussion of MIP services and practices within their community to build support for initiating the community mobilization process. It is during this phase that the community makes a decision to work on improving its MIP service utilization and practices.

The remainder of the actions can occur only if the community decides to move forward with the mobilization effort. During the third action, **explore the health issue and set priorities**, the community uses data to identify and prioritize challenges associated with MIP service utilization and practices in their community. The community then identifies, implements and evaluates activities that address the prioritized MIP challenges. The Key Actions checklist that follows provides more detailed information on each of the steps required to accomplish each key action. Even though these actions take place at the community level, support from

[22] The seventh action of the CAC, "Prepare to scale up" is relevant only if the process is being initiated at a district, regional or national level. This section of the guide assumes that participatory mobilization activities will involve **all** communities in the facility's coverage area, thus taking activities to scale for that area.

the district, regional and national level systems is required for sustainability and quality assurance.

As with **Section 2-3**, this section is written for communities (i.e., villages or groups of villages) within the coverage area of the peripheral level health care facility. Refer to the following publications for more detailed information on the steps for each key action: *How to Mobilize Communities for Health and Social Change* (Johns Hopkins University Bloomberg School of Public Health Center for Communication Programs) and *Community Mobilization for Maternal and Newborn Health* (ACCESS Program).

MOBILIZE COMMUNITIES TO TAKE ACTION TO PREVENT MALARIA IN PREGNANCY			
KEY ACTIONS	**RESPONSIBLE**	**TIMELINE**	**STATUS**
Prepare to mobilize.			
Define the community in terms of geographic coverage such as a village, group of villages, district or region. Identify the key stakeholders for MIP in the defined community. Potential stakeholders include: ● Pregnant women ● Recent mothers ● MOH (i.e., health facility staff) ● NGOs (local and international) ● FBOs and other existing community groups ● Community leaders			
Meet with stakeholders to discuss MIP needs and seek their support in initiating community mobilization on this health issue.			
Assemble a Community Mobilization Team (CMT) that includes the representatives of the identified stakeholders and persons with the following expertise: ● Knowledge of MIP and experience in providing services ● Knowledge of local political, socioeconomic and cultural context ● Knowledge on participatory methods (facilitator) ● Program design and management ● Other members as identified by stakeholders The team will lead the overall mobilization process and provide support to the community to initiate, develop and implement their action plans. After all team members are identified, select a team leader to coordinate the rest of the process.			
Gather additional information about MIP and the community through: ● Baseline surveys and review of existing secondary data sources on availability, accessibility and utilization of IPTp and ITNs ● Focus group discussion or in-depth interviews on sociocultural practices including gender relations			

MOBILIZE COMMUNITIES TO TAKE ACTION TO PREVENT MALARIA IN PREGNANCY			
KEY ACTIONS	**RESPONSIBLE**	**TIMELINE**	**STATUS**
Identify program resources and constraints such as: ● Financial: how much funding is available for community mobilization versus funding needed ● Human: staffing level available versus staffing level needed ● Material: such as supplies, transport and other support items ● Time: program duration/timeline			
Develop a community mobilization plan detailing how the program will guide and support the action plans to be developed by the community. The plan should have the following elements: ● Clear objective for the mobilization(e.g., increase uptake of IPTp, increase utilization of ITNs, improve early utilization of ANC services) ● Clear strategies for developing or re-activating and supporting community groups ● Clearly defined role of members of the CMT during each phase of the CAC ● M&E plan with indicators to measure the CMT achievements in developing the community's capacity to implement CAC			
Strengthen the capacity of the CMT by identifying the team's skills and expertise. Make a list of additional skills and expertise needed for a successful community mobilization. The missing expertise/skills could be built through training or by adding new members with the identified expertise.			
Organize the community for action.			
Orient the community to the mobilization endeavor and introduce the CMT. Meet with the key community "gatekeepers" one-on-one or in a group to discuss the mobilization activities and solicit their support. Ask them to organize a general community meeting. The purpose of this general meeting(s) is to raise awareness of malaria and its impact on pregnancy, and the community's current practices related to this health issue.			
Build community support for increasing IPTp and ITN use. The aim of this step is to support the community to recognize the need to address MIP issues in their community and take the lead in doing so. This will help ensure that they own the process—such ownership is important for sustainability of community-based activities. Examples of the key groups to include in CMT meetings are: ● Existing women's and men's groups ● NGOs working in the community ● Local media ● MOH local staff (e.g., ANC clinic providers)			

MOBILIZE COMMUNITIES TO TAKE ACTION TO PREVENT MALARIA IN PREGNANCY			
KEY ACTIONS	**RESPONSIBLE**	**TIMELINE**	**STATUS**
Select a Core Team/Group from within the community. This could be a newly formed or an existing group, such as village health or development committees, whose primary task would be to lead the development and implementation of the community's MIP action plan. Core group membership could include: ● Pregnant women and recent mothers ● Community leaders ● Representatives of minority or disadvantaged groups ● MIP service providers ● Spouses of pregnant women The Core group with support from the CMT will define the roles and responsibilities of group members.			
Explore MIP issues and set priorities.			
Explore MIP issues with the community and gather information. During this step, the Core group, with guidance from the CMT, will collect and analyze community-specific information on IPTp and ITN use as well as associated inhibiting or enhancing factors to identify priority issues. Information to be collected, analyzed and discussed include: ● Types of ANC services available ● Quality of ANC services ● IPTp and ITN utilization levels ● Community MIP beliefs and practices ● Financial barriers ● Transportation ● Availability of ITNs and IPT services ● Other barriers/enhancers Information can be obtained via focus group discussions, in-depth interviews and service statistics from service providers.			
Plan together. This is the phase in which the community develops its MIP action plan.			
Select the planning team, which could include some or all of the Core group members. If needed, additional members may be added at this point based on the MIP issue to be addressed. This team will be supported by the members of the CMT.			

MOBILIZE COMMUNITIES TO TAKE ACTION TO PREVENT MALARIA IN PREGNANCY			
KEY ACTIONS	**RESPONSIBLE**	**TIMELINE**	**STATUS**
Design the planning session. A successful planning session depends on adequate preparation and appropriate sequencing of planning tasks. With CMT support, the planning team designs the planning session with the following inputs: ● Identified key planning tasks: – Introduce team members – Review CAC – Review community MIP data – Set objectives – Select activities for reaching the set objectives – Identify simple indicators – Agree on next steps ● Sequencing of selected tasks ● Facilitator for each task ● Methodology to use ● Materials and tools needed			
Conduct the planning session and develop the action plan. A member of the planning team and a representative of the CMT should co-facilitate this step. The session is conducted as designed in the previous step, and the team needs to be flexible to accommodate any unforeseen challenges. The plan may be presented in a matrix or any other format that the team approves. However, at a minimum it should include the following elements: ● Key activities ● Resources needed and how to obtain them ● Responsible person(s) ● Completion date			
Review the plan with the general community and make changes. To ensure the buy-in of the general community, it is essential for the planning team to share the action plan with them. The plan should be finalized, taking into consideration comments from the community.			
Act together. This is the phase in which the community implements the specific MIP-related activities included in their action plan.			
Redefine the roles and responsibilities of the CMT and Core teams. The Core team is primarily responsible for carrying out the activities in their action plan with support from the CMT. The CMT should gradually limit their support and hand over most of their responsibilities to the Core team, with the aim of making the Core team independent. This should be done in a systematic manner, in joint discussions, rather than left to chance.			
Support the implementation of the community action plan. The CMT should continue to provide support to the Core team as follows: ● Assist with resources: funds, materials, etc. ● Provide technical assistance when needed. ● Mentor the Core team. ● Mediate conflicts when necessary. ● Advocate on behalf of community.			

MOBILIZE COMMUNITIES TO TAKE ACTION TO PREVENT MALARIA IN PREGNANCY			
KEY ACTIONS	**RESPONSIBLE**	**TIMELINE**	**STATUS**
Evaluate together. This is the phase in which the community assesses whether their planned activities are being completed and having the desired impact on pregnant women's use of IPTp and ITN. (Overall program M&E is discussed in Section 2-6.)			
Assemble an M&E team. Team members could be selected from both the CMT and Core teams but it is important that the team be led by person with expertise in M&E. You may also want to include stakeholders who might not yet have shown interest in MIP activities.			
Select indicator. Keep in mind that the purpose of the M&E phase is for the community to assess itself on how well it has been able to implement the planned activities and their outcome. The indicators should be simple to collect and be understood by the community. The indicators could be a simplified subset of the overall program M&E indicators discussed in **Section 2-6**.			
Design an M&E plan with the following basic elements: ● Simple process and outcome indicators (see Section 2-6 for examples) ● Baseline value and targets ● Person(s) responsible for data collection and/or analysis and presentation to the group ● Data-based decision-making process			
Implement M&E plan, and make necessary changes to action plan, based on the data collected and analyzed: ● The CM and Core teams should first review the process indicators to ascertain whether activities are being carried out as planned. If not, they should find out why, and make the necessary revisions to the plan and/or technical support to ensure that activities are implemented in a timely manner. ● Outcome indicators should be reviewed only if at least some of the planned activities have been implemented. It may be necessary to change the community-planned activities if no effect on ITN and IPTp uptake is observed after implementation of the community's key activities. ● The Core team should discuss the reason(s) for the lack of effect and refine their activities. ● Both the results of the process and outcome indicators, and proposed changes, should be shared with the general community and their input solicited before the changes are finalized.			

KEY ISSUES

- For the community mobilization process to be sustainable and have its intended effect of increasing use of IPTp and ITNs, it is essential for the community to own the process. The primary purpose of the program is not to mobilize the community to address MIP issues, but **to assist the community to mobilize itself** to implement effective activities that will improve MIP service utilization and practices. Often, programs have done the former, which has led to the mobilization process ending with the program's closure because communities relied heavily on the program and did not have the capacity to continue without program inputs. The program facilitates the process and provides the community with the knowledge and skills to explore and set their own MIP priorities.
- Data for planning, monitoring and evaluation of the community's activities are crucial to the success of the mobilization process. However, the community's ability to collect and analyze data may be limited. It is important that the program assist the community to select process and outcome indicators that are easy to collect, analyze and interpret. Sharing the impact of the mobilization effort is a motivating factor for continued participation in activities by members of the CMT and the community in general. The CMT and Core team must develop a system for sharing this information that is acceptable to the general community. This system will vary from one community to the other.
- The steps within the Key Actions need not be followed sequentially. In certain situations, some steps could be omitted. For example, all of the steps in the second action, *organize the community for action*, could be omitted if there is an existing community group such as a village health committee already working on malaria issues in the community. The program's role in this situation would be to assist the community to review its mobilization process and identify areas in which they need their knowledge and skills strengthened in order to improve their activities.
- The Core team might need pictorial materials and other job aids for community volunteers to use for group or home counseling to improve MIP knowledge and practices. Often these materials can be obtained from the health facility or district, regional or national levels. However, should these materials not exist, the program may work with the communities to develop appropriate job aids. The steps for developing these materials are not described in this section, but there are numerous documents available that provide this information. The crucial point to note is that the materials should be based on full understanding of the rationale for the current knowledge and practices, which requires conducting formative research.

COUNTRY EXAMPLE: BURKINA FASO

Community mobilization activities to prevent MIP in Burkina Faso were part of a model program to improve maternal and neonatal health services in the Koupéla district. The program's technical components were partner collaboration, policy and advocacy, improved quality of maternal and neonatal health services, and increased community demand for and access to health services.

At the local or district level, activities were intended to strengthen the capacity of the DHMT, service providers, community health management committees (CoGes) and community groups. At the national level, advocacy efforts with the MOH resulted in updated policy, norms, and protocols that reflected current WHO recommendations for maternal and neonatal health. One objective of the multiple maternal and neonatal health interventions was to integrate oftentimes vertical MIP programming into the ANC service delivery platform.

Moving beyond the traditional model of focusing solely on improvements in clinical quality, the PQI process was systematically applied to all aspects of program interventions (See Section 2-3). Use of the PQI process helped the DHMT, health personnel, CoGes, and communities work together under one framework to improve performance and quality in essential maternal and neonatal care services and increase demand for these services.

The community PQI approach (called community auto-diagnosis) made it possible to discuss maternal and neonatal health problems directly with communities using the same framework used with health professionals. The process taught participants how to identify what was the desired performance in maternal and neonatal health care from the perspective of the woman and her family, barriers to achieving those standards, causes for the delay in receiving services, and recommend solutions for birth preparedness and complication readiness.

During the auto-diagnosis, each community developed an action plan that included priorities and ways to measure progress toward improving maternal and neonatal health. Based on these community-designed strategies, community health agents used simple techniques such as flipcharts and role plays to disseminate health messages. Three local radio stations were used to disseminate key messages more widely. Finally, each year the White Ribbon Alliance organized large-scale community mobilization activities in partnership with communities, particularly at the time of the International Women's Day and the African Malaria Day.

In 2001, the national prevention policy in Burkina Faso was weekly chloroquine chemoprophylaxis. In collaboration with the CDC and the MOH, a facility-based, cross-sectional baseline assessment was conducted

in antenatal clinics and maternity units. The results of the assessment showed high levels of malarial infection (29%), maternal anemia (76%), and low birth weight (14%), despite widespread use of chloroquine chemoprophylaxis (Sirima et al. 2003). In response to these findings, subsequent advocacy efforts, and updated WHO recommendations on prevention of MIP, the MOH agreed to a pilot of three doses of IPT/p with SP in Koupéla district. In collaboration with partners, notably Plan International and UNICEF, this pilot was implemented in all 26 health facilities in the Koupéla district in mid-2002.

Key elements of the community mobilization approach used in Burkina Faso include:

- Identification and organization of community stakeholders—the project met with village chiefs and decision-makers to identify any existing groups that handle health issues and encouraged their formation if none exist. The community selected a man and a woman to serve as community health workers to be trained in MIP.
- MIP training for stakeholders—as discussed in Section 2-4, follow-up after training is essential. In Burkina, the CoGes were followed up once a month for the first quarter following training and then once a quarter. Often the follow-up visit involved direct observations during home visits or community meetings.
- Public meetings to communicate information about MIP and its prevention—CoGes conducted skits focusing on MIP/ANC and use of bed nets. These skits, often involving community members, facilitated open discussion and helped reinforce commitment to prevention programs.
- Promotional opportunities for every level of the population—these included educational chats, home visits, radio and television broadcasts, skits, and art and radio contests.
- Cost-free distribution or sale of ITNs at reasonable prices—partnerships with local NGOs allowed provision of ITNs at no cost to pregnant women attending ANC clinics and at a reduced price for others, sold at the village level.

A population-based follow-up survey was conducted in 2004 to evaluate the effect of the pilot intervention on malarial infection, maternal anemia and low birth weight. Results showed the extent to which the community efforts increased the use of IPTp—96% of women reported taking at least one dose of IPTp at ANC clinics and 93% of women reported taking at least one dose at the maternity units. Coverage of three doses was also high; at delivery, 47% of women reported three doses of IPTp and over 30% of pregnant women reported owning an ITN. The adverse outcomes associated with malaria during pregnancy decreased between 2001 and 2004. Maternal anemia decreased from 76% to 64%, and low birth weight decreased from 14% to 12% (Sirima et al. 2006).

Lessons learned include:

- The community mobilization process must be inclusive—among those participating in the Koupéla district process were village representatives, primary and secondary school pupils (in the art and radio contests), customary and religious leaders, the press, community organizations, health professionals, district health managers and the general public). All stakeholders should be involved from the beginning of the process.
- The community mobilization process does not happen overnight. In Koupéla, the process took two years—the first for organization, sensitization, and stocking of SP and ITNs, and the second for follow-up, coverage of villages not yet reached and strengthening of ITN procurement to prevent stock-outs.
- Clearly define roles and objectives so that all participants know what they have to do and what is to be achieved. This requires continuing dialogue among all stakeholders using straightforward language, particularly between providers and the community—this is fundamental to success.
- As feasible, link community mobilization activities and messages with those applied to improve the quality of health facilities and the supervision of those facilities. This reinforces key messages among all stakeholders and promotes joint accountability for finding solutions.
- De-medicalizing ITNs helped ensure their acceptance by the public. Correct ITN use was demonstrated during village meetings and ceremonies, and posters in local languages reinforced these messages. In addition, village representatives set a reasonable price for their communities to facilitate restocking.
- Working in partnership leads to success.

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SECTION 2-6

MONITOR AND EVALUATE PROGRAMS FOR PREVENTION AND CONTROL OF MALARIA IN PREGNANCY

Effective systems for monitoring progress and evaluating outcomes and impact of evidence-based MIP programs are a critical aspect of measuring a country's success in controlling malaria in general. **Monitoring** involves routine tracking of priority information about a program and its intended activities, outputs and outcomes. Monitoring data can be used to determine whether activities are being implemented as planned, identify barriers to implementation and provide ongoing feedback to program implementers to support their decision-making processes, while ensuring accountability to funders and beneficiaries. **Evaluation** involves periodic assessment of the value of a program's strategies and activities through analysis of program processes, outcomes or impacts to determine if the expected results are being achieved.

The WHO/AFRO Strategic Framework identifies five key areas for M&E that relate directly to RBM objectives:

- Impact of malaria, i.e., morbidity, mortality and economic losses
- Improvements in malaria prevention and disease management, including prevention and control of epidemics
- Related health sector development
- Intersectoral linkages that need to be created or reinforced
- Support and partnerships

The best approach to monitoring programs for prevention and control of MIP is to focus on a small set of priority indicators that are feasible to collect and can be used to track implementation progress and detect any problems so that they can be resolved in a timely manner.

DEVELOPING A MONITORING AND EVALUATION PLAN FOR MIP PROGRAMS

An M&E plan is a concise document that provides a "roadmap" for how M&E will be conducted over the life of the program. To develop this plan, you will need to form an M&E team. Team members should include program stakeholders, including implementation partners, so that their information needs can be addressed. When stakeholders are included, or

their input solicited, it is possible to create a feasible M&E plan that serves multiple purposes. Reaching consensus among program stakeholders about what information can be collected, how and when, as well as how the results will be prepared, disseminated and used, will help ensure that M&E efforts are targeted and useful.

Each of the interventions recommended by the WHO for prevention and control of MIP in areas with stable (high/perennial) transmission of *P. falciparum* malaria (IPTp, ITNs and case management) has a key implementation partner. These partners will include both malaria control and reproductive health program staff. They should develop shared M&E processes because close collaboration will be needed in order to conduct the MIP monitoring and evaluation activities as a joint effort. Specific steps for developing an M&E plan are provided in the following table. M&E for MIP should be integrated within the overall M&E plan for malaria.

MONITOR AND EVALUATE MIP POLICY AND GUIDELINES, DELIVERY OF SERVICES AND/OR COMMUNITY-BASED INTERVENTIONS			
KEY ACTIONS	**RESPONSIBLE**	**TIMELINE**	**STATUS**
Identify information users and their needs (program stakeholders): ● Generate a list of all program stakeholders, e.g.: – Donors/program funders – Program managers/implementers – Beneficiaries (ANC clients, pregnant women, families, communities) – Other organizations/agencies/donors with a common mission ● Solicit input from stakeholders about what they would like to know and how they expect to use the information. ● Determine in what format and frequency the information is required.			
Develop conceptual map/logic model for the program: ● Describe the inputs, activities, outputs, outcomes and impact associated with your program's goals and objectives using a flowchart/diagram. ● Make sure that the activities, outcomes and impacts in the conceptual map are aligned with your project/program's stated goals and objectives. ● Use the elements in this map (outputs, outcomes and impact) to develop your M&E framework.			

MONITOR AND EVALUATE MIP POLICY AND GUIDELINES, DELIVERY OF SERVICES AND/OR COMMUNITY-BASED INTERVENTIONS			
KEY ACTIONS	**RESPONSIBLE**	**TIMELINE**	**STATUS**
Outline key M&E questions and create an M&E framework: ● Identify which questions you need to answer with your M&E information. ● Select indicators that most accurately measure the results of implementing MIP interventions (valid and reliable), are feasible to collect and measure elements in your conceptual map. Consult M&E MIP resources to guide selection (see Resources at end of section, especially WHO 2006). ● Provide a clear definition of each indicator, including the meaning of terms used and the exact calculation (e.g., numerator and denominator if it is a percentage). ● Identify corresponding data sources, either routine (such as health information management system (HMIS) or periodic (such as surveys) and whether they already exist or not. ● Indicate how often each indicator will be collected. ● Designate a person or persons and associated organizations responsible for collecting data for each indicator in the M&E framework.			
Develop an action plan to implement the program's M&E framework: • Outline action items for collecting, managing and analyzing data in your M&E framework (preferably by each data source). This includes identifying any databases that should be developed or modified to manage/store the data and creating a schedule for data collection, management and analysis and responsible person(s)/organizations. • Describe action items for disseminating information to stakeholders, including which information, schedule and format. • Identify the person or persons responsible for each action item above. • Determine the cost of the material and financial resources needed to implement the M&E action plan.			

SELECTION OF INDICATORS

The process of selecting indicators must be guided by the expected program results and associated interventions (as outlined in the program logic model and/or M&E framework). However, the choice of indicators should also be made with reference to internationally standardized indicators, the existing data sources available to the program and the level of M&E resources allocated by the program. In general, it is important to

select output indicators that measure whether or not evidence-based interventions for reducing the adverse consequences of MIP, such as IPTp, ITNs and case management, are being implemented. It is also important to measure the potential impact of prevention programs on maternal and newborn health outcomes such as maternal anemia and low birth weight. The WHO and WHO/AFRO, in the document entitled *Malaria in Pregnancy: Guidelines for Measuring Key Monitoring and Evaluation Indicators,* have recommended a core set of indicators to assess the progress and effectiveness of implementing the package of interventions they recommend for controlling MIP in high transmission areas. These indicators, which include process, outcome and impact indicators, are listed below.

OUTPUT INDICATORS

- Percentage of antenatal clinic staff trained (pre-service, in-service or through supervisory visits) in the control of MIP in the last 12 months or specified time period per country program (including IPTp, counseling on ITN use and case management for pregnant women)
- Percentage of health facilities reporting stock-out of the recommended drug for IPTp (currently SP) in the last month or in the specified time period per country program

Outcome Indicators

- Percentage of pregnant women receiving IPTp under direct observation (first dose, second dose, third dose)[23]
- Percentage of pregnant women who report sleeping under an ITN the previous night

Impact Indicators[24]

- Percentage of low birth weight newborns <2500 grams, singleton, by parity
- Percentage of screened pregnant women with severe anemia (hemoglobin $\leq$ 7gm/dl) in third trimester, by parity

The above indicators should be chosen based on country goals, objectives and resources.

[23] According to national guidelines.
[24] These indicators are influenced by other factors such as nutrition, hookworm infection and pre-term births.

DATA SOURCES

To the extent possible, program planners should draw upon existing data sources that already include key information about outputs, outcomes and impacts of programs to prevent and control MIP, in addition to collecting their own program-specific data. However, it is important to understand and compare the sampling frameworks and indicator definitions used by these different sources, as they may vary. For example, some population-based surveys may be nationally representative, while others may be representative only of specific regions, districts or sub-district program intervention areas.

Three data sources that are crucial for collecting data related to MIP are:

- **Health Management Information System (HMIS):** This refers to routine health monitoring systems already established at all levels of a country's health structure that should include process, outcome and impact indicators pertaining to MIP. Parts of these systems include the service statistics collected through ANC and maternity registers and client/patient cards/charts at health facilities as well as pharmaceutical management information.

  Limitations and drawbacks: The quality of data from routine information systems varies by country. In countries with poor quality data, this data source will be of limited usefulness. HMIS may use outdated data for the denominators of population-based indicators calculated. It is often a lengthy process to revise a country's HMIS to capture new indicators if this is necessary.

- **Health facility assessments:** These assessments are intended to examine the quality of MIP services provided and the readiness of facilities to provide these services. Health facility assessments may include one or more of the following: structured clinical observations of provider-client interactions; audit of MIP-related drugs, supplies and equipment; and/or interviews with clients and facility staff. The assessment process may involve measuring performance against a set of desired performance standards as described in Section 2-3 of this guide. An example of an existing facility assessment is the Service Provision Assessment (SPA) conducted by ORC Macro in multiple countries. The SPA examines the percentage of facilities where ANC clients were prescribed antimalarials as well as the facilities' diagnostic capacity with respect to malaria. For more information about the SPA, go to: http://www.cpc.unc.edu/measure/publications/html/ms-02-09-tool06.html.

  Limitations and drawbacks: Sampling frameworks and indicator definitions may vary across facility surveys. Data from health facility surveys describe only the women attending the type of facility

surveyed (usually public sector),and are not descriptive of women in the general population, some of whom, for example, may obtain services or medications for prevention and treatment of malaria from the private sector, pharmacies, community members, etc. Clinicians with standardized observation skills must carry out clinical observations.

- **Household surveys:** These surveys serve as an essential data source for measuring the outcomes and impact of programs to prevent and control MIP. There are three major population-based surveys that gather relevant MIP information: the Demographic and Health Survey (DHS), the Multiple Indicator Cluster Survey (MICS) and the Malaria Indicator Survey (MIS).[25] The RBM Monitoring and Evaluation Reference Group ensures that these three surveys use standardized indicators. A reduced version of the MIS ("Lean Malaria Module") is also available to be used at the national or sub-national level, and can be incorporated into other household surveys.

  Limitations and drawbacks: Sampling frameworks and indicator definitions may vary across surveys, although the three surveys above use standardized indicators. Data from nationally representative surveys such as the DHS are collected only every five years or so and are not representative below the regional/provincial level, so they are not suitable for measuring change for programs working at the sub-regional level (e.g., district) with shorter timeframes (less than five years). The DHS and MICS also do not collect information on cause of death. Design and implementation of sub-national, program-specific population-based surveys is relatively expensive.

Other routine data sources that may prove useful include non-facility-based information sources that capture other interventions such as capacity building, community education and other community-based intervention. In addition, vital registration/demographic surveillance systems are important sources of cause of death information, in addition to facility-based cause-of-death records.

Once important indicators and data sources have been reviewed, it is important to show the linkages between the two. The following table presents illustrative MIP indicator topics organized by the key data sources described above. At the facility level, routine reporting on facility-based quality of care indicators and indicators of compliance with MIP standards have been found to be useful for monitoring and evaluating implementation of MIP guidelines. The purpose of collecting a variety of data is to generate a minimum number of indicators that will reflect dissemination, implementation and results of MIP programs.

[25] See WHO's *Malaria in Pregnancy: Guidelines for Measuring Key Monitoring and Evaluation Indicators* for more information on these surveys.

TYPES OF INDICATORS AND DATA SOURCES APPROPRIATE FOR MONITORING AND EVALUATING MIP PROGRAMS		
	Indicator Types	**Sample Indicator Topics**
HMIS (e.g., registers, client cards, pharmaceutical management records)	These indicators are intended to reflect utilization and quality of services at a national and/or sub national level. Morbidity and mortality data are also captured.	• IPT 1 and 2 among ANC clients • Distribution of ITNs or vouchers for ITNs to ANC clients • ANC clients: 2 doses of Tetanus toxoid, syphilis testing and treatment, timing of 1st ANC visit • Stock-outs of SP
Health facility assessments (e.g., SPA)	These indicators are intended to reflect quality of care provided at specific facilities for MIP and the readiness of facilities to provide high-quality services.	• Provider training, knowledge and practices • MIP services offered • Supplies and drugs available • Record keeping • ANC client knowledge, practices and reports/perceptions of quality services
Household surveys (e.g., DHS, MICS, MIS)	These indicators are intended to reflect service utilization, morbidity and mortality,[26] community knowledge, attitudes and practices.	• Under 5 mortality rate (DHS, MICS) • Possession and use of ITNs by children under 5 and pregnant women • IPT 1 and 2 among all pregnant women • Prevalence of anemia (by hemoglobin measurement) in children under 5 and women (DHS) • Low birth weight newborns (singleton) by parity

KEY ISSUES

- Given that MIP is a relatively new policy in many countries, and HMIS forms and processes are often slow to change, it may be necessary to advocate for revision of MIP documentation and/or develop supplementary record-keeping forms. Such revision should incorporate indicators to measure the recommended MIP interventions. For example, with respect to IPTp, it will be necessary to ensure that the record-keeping system in ANC clinics measure first and second doses of IPTp:

[26] In some African countries, demographic surveillance data, such as data collected through the INDEPTH global network of demographic surveillance sites (37 sites in 18 countries, 26 sites in Africa), may also provide a good source of population-based data on maternal and newborn morbidity and mortality related to malaria. RBM has supported this network to try to obtain better quality data in areas where routine health management information systems are inadequate.

- The ANC client card should include doses and dates of IPTp (card stays with pregnant woman).
- The ANC register should include doses and dates of IPTp (register stays at clinic).

  However, if there is not adequate space in existing ANC registers to add information about IPTp forms, it may be necessary to work with stakeholders to design and implement a supplemental form.

- Many programs do not have adequate resources to conduct comprehensive facility assessments and/or population-based surveys. Relying on established facility assessments and population-based surveys when possible will help to conserve resources and will also help to ensure that the data used for MIP M&E are of good quality, standardized and internationally comparable.

COUNTRY EXAMPLES: UGANDA AND KENYA[27]

M&E are important processes to track the progress of program implementation and assess the effectiveness of interventions. In 2001, indicators to monitor and evaluate programs that address MIP were developed by the WHO (Roll Back Malaria and Making Pregnancy Safer Departments, Geneva and WHO/AFRO) with contributions from technical, bilateral and multilateral agencies (WHO 2006). This M&E guidance document for MIP is intended to promote dialogue among health care providers, district managers, policymakers and other stakeholders on measuring progress toward national and international MIP targets in a standardized way, helping to document reductions in adverse outcomes of MIP.

The draft indicators were pilot tested in Uganda (January to July 2003) and Kenya (July to December 2003). The objectives of the pilot test were two-fold—to examine the feasibility of adapting the indicators into the routine health information system (HIS) in each country without overburdening health care providers and administrators; and, to determine if the indicators were useful for decision-making.

Based on the results of the pilot tests, the WHO currently recommends the following facility-based indicators be collected as part of the routine HIS:

- Percentage of ANC staff trained in MIP in the last 12 months
- Number of days of stock-out of SP in last month (by facility)

[27] M&E Country experience contributed by Allisyn Moran. For more details on these studies, including tools used in each country, see the WHO Guidelines referenced at the end of the section.

- Percentage of pregnant women who receive first dose IPTp under direct observation
- Percentage of pregnant women who receive second dose IPTp under direct observation

The WHO also recommends collecting information on use of ITNs, low birth weight by gravidity, and anemia in the third trimester by gravidity. It was not feasible to collect data on these indicators at the facility level, based on the results of the pilot test. Therefore, the WHO recommends that this information be collected via routine household surveys (DHS or MICS), special studies or at sentinel sites. There were several reasons for this recommendation. First, unlike IPTp, ITNs were not routinely distributed as part of ANC, and it was therefore difficult to evaluate the feasibility of the ITN indicators. Second, many of the health facilities did not have functioning weighing scales, so it was difficult to accurately measure the low birth weight indicators. In addition, because less than half of women in Uganda and Kenya give birth at a health facility, the measures of low birth weight were not representative of the population. Finally, third trimester anemia was difficult to measure because of a lack of laboratory facilities. Women often were referred to pharmacies to test for anemia, and the results were not recorded in the ANC register. These indicators are very important for monitoring and evaluating MIP programs, but should be collected by different mechanisms.

OVERVIEW OF THE PILOT TEST

The draft list of indicators was discussed in Uganda and Kenya with key stakeholders, including the national malaria control and RH programs, the WHO, and implementing partners (Jhpiego and the Malaria Consortium). Both countries pilot tested the WHO indicators in 2001, and added other indicators essential to their individual M&E needs. For example, in Kenya, an indicator was added on percentage of women who attended four antenatal care visits. After consensus on the indicators was reached, two districts in each country were chosen for the pilot activities. Selection criteria included districts with full implementation of the WHO-recommended MIP interventions[28] and regional representation. All facilities in each of the selected districts were included in the pilot activities.

In each of the pilot districts, the indicators were integrated with the routine HIS by modifying the ANC and maternity registers. Columns were added to the ANC register to record the first and second doses of IPTp as well as use of ITNs. In the delivery register, a column for gravidity was added. In

[28] WHO-recommended policies to prevent MIP include: intermittent preventive treatment (IPTp) using an effective antimalarial drug and insecticide treated nets (ITNs). Sulfadoxine-pyrimethamine (SP) is currently used for IPTp.

addition, spaces to summarize the information needed for the numerator and denominator for each indicator were included at the bottom of each page of the registers.

The MOH and NGO partners in each country developed training materials. Orientation meetings were conducted with district health management teams and other key stakeholders. Health care providers and record clerks in each of the pilot districts were trained in MIP and how to use the adapted registers. Supervisors were trained in supportive supervision, including how to verify the registers and give constructive feedback to health workers on MIP counseling. Health care providers were instructed to summarize the information needed for the MIP indicators after completion of each page of the ANC and/or maternity register.

Each month, health care providers and/or record assistants summarized information needed to calculate the MIP indicators in an addendum to the regular (monthly) HIS form. This addendum was sent to the district level, where district staff calculated the indicators, aggregated the information from all health facilities and sent it to the national level.

District or central level staff made supervisory visits on a monthly basis to ensure health care providers were completing the registers correctly and to provide feedback. In Kenya, health care providers were interviewed to assess knowledge, attitudes and practice about IPTp and use of ITNs, and all records related to MIP were verified. In Uganda, district-level managers visited each of the facilities participating in the pilot over five days to support health care providers and record clerks. At the district level, national level managers supported district level managers for two days every month at a few sampled health facilities.

A final evaluation was conducted at the end of the piloting period. This evaluation included review of the indicators collected during the pilot period as well as interviews with health care providers, record clerks, district level staff and national level staff.

SUMMARY OF FINDINGS

Uganda. During the pilot, all eligible women received IPTp under direct observation. Supply of SP improved during the pilot, but there continued to be difficulties in the Soroti District. Almost all health care providers and record clerks (80%) reported receiving supervision during the pilot. In addition, the quality of supervision and record-keeping improved.

There were some constraints noted during the pilot. First, health care providers had difficulty differentiating between SP given for case management of MIP and SP given as IPTp and were not sure how to record this in the ANC register. Often the column for the first dose of

IPTp was checked in the register for a dose given for case management of malaria. (IPT **is** a treatment dose of SP but is given as prevention, not treatment). There were also difficulties in summarizing the number of first ANC visits versus returning ANC visits. To overcome this challenge, one health center color-coded notations about women with first ANC visits to highlight those to be included in the MIP indicators. There were also problems with staff turnover and lack of a mechanism to train new staff. Some health facilities did not have weighing scales, and data on anemia were not collected because laboratory facilities were not available.

Kenya. After the pilot, health care providers were aware of the importance of providing IPTp under direct observation to all women during ANC, regardless of parasitemia status. The registers were well kept except in a few cases that had incomplete summaries. SP was given free in government facilities, and clean cups and water were provided for DOT. The regular supply of SP improved and there were no stock-outs in the facilities during the pilot period. This was probably due to a combination of factors—the facilities were part of the pilot activity and Kenya received funding from the Global Fund to buy SP.

There were some difficulties noted as well. There was often a shortage of staff and no mechanism in place to train new staff in how to complete the adapted registers. Some of the spacing of the columns in the registers was too small, which made it difficult to summarize the information. There were shortages of ANC cards and registers, and some health facilities did not have weighing scales for the newborns. It was difficult to collect information on anemia because of lack of laboratory services and the costs of these services. In addition, ITNs were not affordable and usage was therefore low. Health workers had some difficulty summarizing the data, and health facilities did not receive feedback from the districts in regard to the indicators collected.

LESSONS LEARNED

There were several lessons learned from the pilot test of M&E indicators in Uganda and Kenya.

Training and immediate follow-up are essential. The pilot experience demonstrated the need for immediate follow-up to health care providers after training to ensure that they are accurately recording the information on MIP. Health care providers also benefited from practical experience during the training in how to complete the revised registers. It is also important to integrate all training events into ongoing RH training, so as to be more efficient and avoid overlap and waste of staff time.

Supervision was a key element in this pilot test. It is essential to have adequate supervision to ensure high-quality data collection. During routine

supervision it is important to check how records have been filled out and make corrections as needed. Supervision for MIP indicators should be integrated with regularly scheduled reproductive health visits.

Mechanism for training new staff is necessary. Because staff turnover is quite high in Kenya and Uganda, a training mechanism for new staff rotating into the facility, as well as updates for trained staff, is essential to ensure high-quality data collection.

Routine HIS needs to be strengthened. The flow of information was weak from facility to district levels and from district to facility levels. This flow needs to be strengthened to ensure adequate use of the information, and would also help health care providers recognize the importance of the information being collected.

Incorporate indicators into existing registers. Health workers are already overburdened with the number of registers and forms; therefore, MIP indicators should be integrated with existing registers. It is important to identify which data are needed at each level and the roles and responsibilities of staff. The importance of using local solutions to decrease staff workload was demonstrated during the pilot. For example, some health units established codes with colors to mark first ANC visits, which facilitated tabulating this information.

Include the private sector. It is essential that data on prevention of MIP be collected from the private sector. Mechanisms to motivate the private sector to send data to the public health system should be explored.

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SECTION 3

PRACTICAL SOLUTIONS TO FREQUENTLY SEEN PROBLEMS[29]

This section of the Guide draws on country experiences to provide suggestions for how to overcome problems most frequently seen at the level of the health center, where women receive MIP services.

WOMEN DO NOT COME EARLY IN THEIR PREGNANCIES FOR ANC

The MOH in **Togo** has initiated community mobilization campaigns explaining the advantages of attending the ANC clinic as soon as possible after the woman knows that she is pregnant. These messages are reinforced by providing ITNs, pediatric follow-up visits, and vaccinations through the ANC clinic as a way of attracting pregnant women to the clinic.

Strategies promoting early ANC attendance at the national, provincial and district levels are part of annual RH/Medium-Term Expenditure Framework (MTEF) action plans in **Zambia**. These strategies focus on informing and educating women and the community about the benefits of early first visits for ANC by using neighborhood health committees, local radio programs in local languages, national television programs and IEC materials targeted to the community.

In **Kenya**, the program focuses on improving communities' awareness about broad RH issues, including MIP and the importance of ANC attendance and strengthening the link between communities and facilities.

The extreme geographic diversity of **Madagascar** makes access to public health services difficult, as illustrated in the difference in the number of women attending ANC in rural areas (77%) and those living in urban settings (90%). The Ministry of Health and Family Planning (MOH/FP) is using community education to promote ANC nationally through outreach activities and different media outlets, including radio. Health care providers are advised to use any health care visit as an opportunity to encourage ANC attendance. Health centers offer free ITNs to every woman who attends ANC. It is hoped that women attending ANC will spread the word in the community about the availability of ITNs at the ANC clinic.

[29] Country experiences for this section were contributed by Sanyu Kigondu and Kaendi Munguti (Kenya), Eloi Amegan (Togo), and Francis Chanda and Bernard Chisanga (Zambia).

WOMEN ARE NOT GIVEN ANTIMALARIAL DRUGS RECOMMENDED PER NATIONAL GUIDELINES OR DO NOT USE THEM IF THEY ARE AVAILABLE

Financing from the Global Fund provided Togo with a sufficient supply of SP to meet its needs until the end of 2006. SP is given free of charge at the ANC clinic under direct observation. However, women often forget to bring cups or refuse to take the drug because they have not eaten before coming to the clinic. The National Malaria Control Program (NMCP) is considering providing disposable cups for DOT. Providers tell women to eat before they come for ANC and the clinics also have cereal on the premises that women can buy for breakfast, before taking SP.

Policy in Kenya has been changed to allow provision of SP, as DOT, in ANC clinics free of charge (previously it was available only from pharmacies at a cost of about 20–50 ksh). In government facilities, SP is provided as part of health center and dispensary kits. If the drug is missing from the kits, the facility manager/DHMT members can acquire SP from nearby health facilities or use cost-sharing funds to replenish stock levels. This coverage does not extend to FBO, NGO and private health facilities. The MOH is considering provision of SP to these facilities if appropriate documentation is in place.

MAC has worked in close collaboration with the MOH/FP in Madagascar since 2003 to help revise the national MIP policy and build capacity to procure and distribute SP. Monitoring change in clinical performance standards at five pilot IPTp sites showed that the sites had recurrent stock-outs of SP and ITNs. Use of these data to demonstrate service gaps and build partners' understanding of the problems with stock-outs has been a central strategy to improving the distribution of SP. Various RBM partners are working with the MOH/FP to develop standardized procedures for quantifying and then tracking the use of SP over time.

DOTS is the preferred method of providing SP in Madagascar, but it is a challenge at health facilities that lack access to water. The health clinic CSB2 Ambohipeno (SSD Tsiroanomandidy) offers a practical solution and serves as a good example for other clinics. The clinic has a 15-liter container of water with a spigot so that the patient can take the pills and be directly observed by a health worker. The MOH/FP is also revising patient's ANC cards to track whether they have received SP and when they received the medication.

In addition, partners are working to encourage the MOH/FP to gather testimonials from clients regarding the positive benefits of taking SP to use for future media campaigns and educational materials. At one site in Madagascar, a pregnant client said that before being pregnant and receiving SP, she used to get malaria on a fairly regular basis but since being pregnant and being treated with SP, she had not had malaria. Such

comments, when accurate and widely publicized, will encourage more women to attend ANC.

WOMEN ARE UNABLE TO OBTAIN ITNS OR DO NOT USE THEM IF THEY ARE AVAILABLE

Beginning in 2005, Togo began a system of cost recovery, providing ITNs at a cost of 500 F CFA per net through ANC clinics, during follow-up visits for children under five, and during vaccinations. The rate of ITN use is less than 50% in the coastal regions and Lomé-Commune, and more than 60% in *septentrionales regions*. Reasons for non-use include:

- Many persons sleep in the same room.
- People use woven mats for sleeping and it is not possible to hang the ITNs with the mats.
- It is uncomfortable ("suffocating") to sleep under nets in warmer weather during the dry season, especially in narrow, unventilated rooms.
- A new net may not be used because the family still has a net, not realizing that the insecticide may have worn off of the old net.
- The woman and children are unable to sleep under the net because the father is sleeping under it.

The National Malaria Control Board (NMCB) has initiated a community mobilization campaign using local community agents who go from house to house for counseling and discussions with women and their families. The agents check to see that the ITNs are hung correctly, or, if they are not, help women to hang them correctly. The agents try to determine the reason why ITNs are not being used and educate the woman and her family accordingly.

The ANC clinic was expected to be the key distribution point for provision of three million ITNs during 2006–2007 in **Zambia**. The MOH/National Malaria Control Center (NMCC) is strengthening its procurement, storage and distribution systems to ensure a consistent supply of ITNs.

Kenya has increased ITN distribution, which has led to increased coverage among vulnerable groups. A combined approach that includes providing heavily subsidized ITNs to pregnant women attending ANC as well as promoting sales through the commercial sector coverage has reached 50% of pregnant women in three malaria-endemic provinces.[30]

[30] *Source*: Population Services International (PSI) Malaria Control. 2006. *Mosquito Net Coverage of Vulnerable Groups Reaches 50% in Kenya*. PSI Malaria Control: Nairobi. (April). At: http://www.psi.org/malaria/malaria-resources/kenya-brief.pdf.

Determinants of success and lessons learned include:

- Development of an appropriate strategy that makes best use of the comparative advantages of different partners, the public sector, commercial sector and NGOs/FBOs.
- Coordination of efforts and responsibilities. With the MOH as lead and the WHO providing technical support, PSI, with support from DFID and USAID, provided management distribution, promotion, accountability and training inputs through the government and commercial sector infrastructure.
- Capacity building among health care providers through training. Training focused on promoting purchase and use of ITNs in the context of broader malaria prevention and treatment messages.
- Delivery through ANC clinics. Delivery of ITNs directly to ANC clinics. Nurses promoted the purchase and use of the nets by vulnerable groups during health talks and routine consultations. Health facilities purchased the nets (30ksh) and resold them at a slightly higher cost (50ksh) to pregnant women. The 20ksh (US$0.25) was a source of income for health facilities for infrastructure improvements and/or other recurrent costs.
- Expanding and improving commercial sector ITN delivery. This included considerable advertising and communications support. It also included efforts to strengthen the capacity and scope of manufacturers' and distributors' efforts.
- NGO partnerships to expand ITN delivery. Small NGOs that work in rural communities are uniquely positioned to educate and promote the use of ITNs within those communities.

In Madagascar, the MOH/FP has funding from the Global Fund to Fight AIDS, Tuberculosis and Malaria to procure ITNs, and a national strategy is in place for distribution. The MOH/FP will promote the use of ITNs through community education and the efforts of health care providers, using any health care visit as an opportunity to address the importance of using ITNs.

REFERENCE FOR SECTION 3

Population Services International (PSI) Malaria Control. 2006. *Mosquito Net Coverage of Vulnerable Groups Reaches 50% in Kenya*. PSI Malaria Control: Nairobi. (April). At: http://www.psi.org/malaria/malaria-resources/kenya-brief.pdf.

SECTION 4

FINANCING CONSIDERATIONS

According to the Stages of MIP Program Implementation Matrix (see Section 1), a country has achieved Stage 4 when the "National government has committed and disbursed funds to MIP programs which significantly contribute to projected costs; ample donor funding exists." Effective malaria prevention and control programs require long-term investments in strengthening health system capacity and require well-planned financing schemes. The WHO Strategic Framework states that "Financing must be part of the strategic and implementation plan for malaria implementation and control" (WHO 2004). As with the delivery of MIP services, financing requires an integrated and collaborative approach between the reproductive health and malaria control programs at the national and district levels.

COST COMPONENTS

The WHO Strategic Framework recommends that "The one-to-two year implementation plans for national and district levels (derived from the national strategic plan) include **cost and source of funds for each activity**" (WHO 2004). Thus, costs must be calculated and funding obtained for each of the key components required for program implementation, with special attention to the following costs and funding needs:

- National level development of policies and guidelines, including stakeholder meetings, needs assessments, technical updates, support for development and field-testing of SDGs and translation and printing of SDGs
- All dissemination activities at all levels ensuring that front-line facility staff are reached
- Advocacy efforts by national staff to ensure financial and programmatic support by district and other sub-national policy and decision-makers
- Initial updating and reproduction of revised ANC cards and records, and ongoing costs of producing supplies of these records at all levels
- Drug and ITN procurement, storage and distribution to ensure that commodities are in place before beginning training activities and throughout the coming years
- Strengthening quality assurance systems, including training for program managers and supervisors

- Developing, translating and printing MIP training materials; training of trainers, pre-service faculty, front-line service providers, community-based workers and resource persons, and supervisors
- Curriculum development along with supportive materials and staff training to ensure up-to-date pre-service preparation in malaria control for health workers
- Community programs, including resources for raising community awareness and enhancing demand for acceptance and use of IPTp and ITNs
- M&E to provide data for more rational program decision-making and to demonstrate the success of the MIP program; this includes more than just record forms but the expenses of collecting, analyzing and sharing data for decision-making
- Existing financing mechanisms for health such as insurance schemes, vouchers, waivers, user fees, etc.; program managers that take into account the cost-effectiveness of alternative approaches in making decisions about resource allocation

Some costs will be recurrent, such as those for commodities and in-service training, while others may be one-time costs at the beginning of a program or during a major policy change. Examples of the latter include dissemination workshops for policies and guidelines. Since there are different costs at different phases of implementation, malaria program managers must develop a series of annual budgets that are relevant to the phase of program implementation.

When examining financing options, program managers must appreciate the level of decentralization in the country and where the financing decisions are being made. They need to understand whether the drugs for preventing MIP are part of the essential drug lists and how the procurements are tied into the procurement of ITNs. It is also important to determine what will be the client's out-of-pocket expense. These issues could have major budget implications for the program.

Another cost consideration relates to choice of strategy and commodity. For example, there is a choice between offering ITNs or LLINs. The former are less expensive, but require purchase of re-treatment packets every six months. LLINs have greater up-front costs but may not require replacement for five years. Every program decision has cost implications.

FINANCING POLICIES

Generally, people in less developed countries pay more out-of-pocket expenses for health care than do those in middle or higher income countries. Malaria control services must be affordable so that they can be

accessed without delay and save lives. It is therefore important not only to plan at each level of the health system which cost components should be included in malaria control services, but also to strategically identify the sources of financial support for programs to ensure that poor women get the best services at a cost they can afford. This requires addressing key questions about malaria policy implementation at national and sub-national levels, such as the following:

- Will fees be part of overall government ANC service design?
- Specifically, will IPT and ITNs be offered free-of-charge?
- If ITNs are not free, what financial mechanism will be used: subsidies, vouchers, social marketing, open market or a combination based on ability to pay?
- Will government provide free or reduced price SP and ITNs to private sector and NGO health facilities?
- Is there a unified national fee and financing policy, or do different states, provinces or districts adopt their own policies?

If malaria service costs are not going to be a burden to the poor, program managers and policymakers need to plan a package of financial backing to ensure that the programs run smoothly. This plan involves assessing the national governmental and philanthropic as well as international donor funding environments. As of this writing, there are a number of large-scale international and bilateral donor programs aimed at supporting major national malaria control efforts. In some cases the country must apply for funds, while in others the donor selects the countries it wants to support. In short, a basket of potential funding is available that must be sought and allocated in a systematic way to address the cost components listed above over a two- to five-year span.

FINANCIAL PLANNING[31]

Experiences from the Malaria in Pregnancy East and Southern Africa Coalition (MIPESA) indicate the following challenges regarding financing for MIP:

- RH programs are usually poorly funded, which has a direct impact on support for MIP as an RH issue.
- Social health insurance schemes are still nascent and unable to generate reasonable resources for health programs.

[31] *Adapted from*: Malaria in Pregnancy East and Southern Africa Coalition (MIPESA), World Health Organization (WHO) and ACCESS Program. 2006. *Assessment of MIPESA Country Experiences in the Adoption and Implementation of Malaria in Pregnancy Policies, Including Best Practices and Lessons Learned*. WHO and ACCESS Program.

- FBOs that typically provide a substantive portion of health services are facing financial challenges that impede their capacity to completely fill the gaps.
- Pooled resources through sector-wide approach (SWAP) mechanisms result in competing priorities for all health programs.
- Partner funding is sometimes targeted to certain regions and/or districts, which may not be the priorities for the respective countries.

Strategies or approaches that have been demonstrated to be effective in addressing some of these challenges include:

- Establishment of national technical advisory groups has contributed to a higher recognition of the need to support MIP programs.
- The national level programs must play a role in advocating for malaria as a priority in their countries, especially as decentralization becomes more evident.
- Partnerships between national malaria control programs and national RH programs contribute to a greater success and wider roll-out.

SOURCES OF FUNDING

Broadly speaking, policy-makers and program managers need to consider two sources of funding—internal and external. Most donors assume that countries and sub-national level entities such as states and districts will be contributing to the pot of money that funds malaria control activities. Most donor programs have a time limit and expect that countries themselves will pick up total program costs after a period of, for example, five years. Countries need to start early to plan how they will meet the need for malaria control services when donor funds run out.

Even in the short run, planning for local/national financial commitment is needed to ensure equitable provision of malaria control services. **We need to avoid service gaps.** If, for example, a district projects that there will be 20,000 pregnant women who are likely to attend ANC in the coming year, and a donor program provides 20,000 doses of SP for IPTp, it is incumbent on the national or district malaria control program managers to find another 20,000 doses of SP, or else the drug supplies will be finished in only six months. They therefore may need to advocate for additional funds from district councils or local charities.

When accessing national level funds, program managers should educate themselves fully on their own national and district budgeting processes. The process of getting funds for a program often starts more than six months before the end of a fiscal year. A budget is proposed and eventually an amount is agreed on. Even after budgets are published, there

is the challenge of getting funds allocated to meet those needs. Another challenge is getting the allocated funds released in a timely way.

This tedious budgeting process often drives program managers to rely heavily on external donor funds, but such reliance will not provide a long-term solution for sustaining malaria control services. This challenge is why community-level mobilization and education are important components of malaria control efforts. When demand is created, advocacy can be more effective in ensuring a regular source of local financial support for malaria control.

To address the future resource allocation for MIP programs, the policymakers and program managers need to be aware of the sources of donor funding such as the Global Fund, the World Bank's Booster program, the President's Malaria Initiative, the Gates Foundation and private sector corporations. These sources will change over time, but some of the common ones are listed below.

- The Global Fund to Fight AIDS, Tuberculosis and Malaria, see: http://www.theglobalfund.org.
- US Government Response:
  - President's Malaria Initiative, see: http://www.fightingmalaria.gov/
  - USAID, see: http://www.usaid.gov/our_work/global_health/id/malaria/index.html
- The World Bank Booster Program, see: www.worldbank.org/afr/malaria
- The Bill and Melinda Gates Foundation, see: http://www.gatesfoundation.org/GlobalHealth/Pri_Diseases/Malaria
- UNICEF, see: http://www.unicef.org/health/index_malaria.html and see your country representative
- International Federation of Red Cross and Red Crescent Societies, see: http://www.ifrc.org/what/health/diseases/malaria/index.asp

Please note that some of these donors have offices in malaria-endemic countries, while others operate from their headquarters. Also, there are other groups that provide technical assistance that can be quite valuable in developing proposals to submit to the funding agencies mentioned above. These include:

- The Roll Back Malaria Partnership, see: http://www.rbm.who.int/
- The World Health Organization, see: http://www.who.int/malaria/ and see your country representative
- USAID (see your country representative)

REFERENCES FOR SECTION 4

Malaria in Pregnancy East and Southern Africa Coalition (MIPESA), World Health Organization (WHO) and ACCESS Program. 2006. *Assessment Of MIPESA Country Experiences in the Adoption and Implementation of Malaria in Pregnancy Policies, Including Best Practices and Lessons Learned*. WHO and ACCESS Program. At: http://rbm.who.int/partnership/wg/wg_pregnancy/docs/MIPESA_Report2006.

World Health Organization (WHO). 2004. *A Strategic Framework for Malaria Prevention and Control during Pregnancy in the African Region.* WHO Regional Office for Africa: Brazzaville.