

Prevention and Treatment of Malaria during Pregnancy

Program Brief

Linking prevention and treatment of malaria with focused antenatal care is key to improved maternal and newborn outcomes in malaria-endemic areas.

Malaria is a parasitic infection that poses a serious threat to the health of pregnant women and young children in sub-Saharan Africa and other tropical areas. More than 45 million women—30 million of them in Africa—become pregnant in malaria-endemic areas each year. Women who are infected with *Plasmodium falciparum*, the type of malaria that is most prevalent in Africa, may experience maternal anemia and impaired fetal growth, both of which contribute to low birth weight in newborns (Schulman et al. 1999). Malaria can also cause miscarriage, stillbirth, premature birth, and intrauterine growth restriction (Menendez et al. 2000).

Malaria during pregnancy can be prevented, reduced, and managed with appropriate, low-cost interventions. Following the recommendations set out by the World Health Organization (WHO) in its *Strategic Framework for Malaria Control during Pregnancy in the WHO Africa Region*, the Maternal and Neonatal Health (MNH) Program promotes the use of intermittent preventive treatment (IPT) and insecticide-treated bed nets (ITNs) for the prevention of malaria, and supports effective case management for treatment of malaria during pregnancy (WHO 2003). The Program promotes these interventions as part of its focused antenatal care (ANC) approach. Because the majority of women in developing countries visit an antenatal care clinic at least once during pregnancy, ANC is an obvious platform for implementing interventions for preventing and managing malaria during pregnancy.

The MNH Program promotes the prevention and treatment of malaria during pregnancy through its training and support

of maternal and neonatal healthcare providers, through revising training curricula to include the most up-to-date practices, and through social mobilization efforts to educate

Studies suggest that in malaria-endemic areas malaria during pregnancy contributes to 3–5 percent of maternal anemia, 8–14 percent of low birth weight, and 3–8 percent of infant mortality (Steketee et al. 2001).

community members about appropriate actions to help protect women and newborns from malaria. In addition, the MNH Program is an active participant in a number of global and regional initiatives that are developing and

implementing policies for the prevention and control of malaria during pregnancy.

Malaria Transmission and Maternal Immunity in High Transmission Areas

In areas where transmission of malaria is stable (high), such as in many parts of sub-Saharan Africa, many adults have developed immunity to malaria and do not develop symptoms when they become infected. However, when a pregnant woman has been infected with malaria, even if she has no clinical symptoms, she may develop placental parasitemia, which can contribute to maternal anemia and impaired fetal growth—two of the leading causes of low birth weight and poor survival for newborns and infants in Africa. Babies born with low birth weight are four times more likely to die as infants than are babies born with normal birth weight (Aitken 1990). Malaria infection during pregnancy has been estimated to cause 75,000–200,000 infant deaths each year in stable transmission areas (Steketee et al. 2001). Women in stable transmission areas have the greatest risk of developing these complications during their first and second pregnancies (Brabin 1983; Jelliffe 1968; McGregor, Wilson, and Billewicz 1983; and Steketee et al. 1988).

The Abuja Declaration, developed by the African Heads of State and Government in 2000, commits to achieving the following goals for prevention and control of malaria by 2005:

- At least 60 percent of pregnant women will have access to and use effective preventive measures
- At least 60 percent of children under five will have access to prompt and effective treatment

The international health community is responding to this challenge. The World Health Organization and UNICEF are working with national malaria control programs to update malaria policies and guidelines. Technical agencies in Europe and the United States are working together and with the reproductive health divisions of ministries of health to ensure effective implementation of the new policies.

A woman's immunity to malaria may be compromised by HIV infection (Steketee et al. 1996). The prevalence and intensity of malarial infection during pregnancy is higher among HIV-positive women, and the risk to the woman and her newborn exists regardless of the number of times the woman has given birth (Verhoeff et al. 1999). The influence of malarial infection on the risk of mother-to-child transmission of HIV is still being researched.

Pregnant women who have little immunity to malaria—both those in areas of unstable transmission and those whose immunity has been diminished by HIV or other factors—are more likely than women who are not pregnant to experience severe illness as a result of malaria infection, and may also experience poor pregnancy outcomes. These women are at risk of developing malaria-related problems during every pregnancy.

What Can Be Done?

Effective strategies to reduce the impact of malaria during pregnancy must address both the need to prevent illness in asymptomatic pregnant women and the need to manage disease in women with clinical illness. Following WHO's guidelines, the MNH Program's approach to malaria prevention and treatment emphasizes initiating preventive measures during antenatal care and effective case management for all clinical cases of malaria.

Prevention of Malaria during Pregnancy

The MNH Program promotes IPT (the administration of drug therapy in full treatment

doses at predetermined intervals during pregnancy) and the use of ITNs as the best ways to prevent and control malaria. Because many pregnant women—as many as 70 percent in Africa—attend at least one antenatal care visit, the Program supports incorporating these prevention approaches (as well as the provision of iron/folate supplements to prevent anemia) into routine focused antenatal care. Antenatal care visits also provide a good opportunity for a third element of a preventive strategy—education and counseling about malaria.

Intermittent Preventive Treatment: WHO

recommends that all pregnant women in areas of stable transmission receive IPT with an appropriate antimalarial as a routine part of antenatal care. IPT is the preferred approach because compliance with the IPT approach is greater than compliance with weekly chemoprophylaxis (WHO 2003). Whereas chemoprophylaxis requires that a woman take the antimalarial (usually chloroquine) at home over the course of several days each week, the IPT approach allows her to take an entire treatment dose of an antimalarial during an antenatal care visit, under the care and supervision of a healthcare provider. Sulfadoxine-pyrimethamine (SP) is the current antimalarial drug of choice for IPT. SP is preferred over chloroquine, the antimalarial drug traditionally used during pregnancy, because resistance to chloroquine is prevalent and increasing in many malaria-endemic areas.

Although a single dose of SP has been shown to be effective in reducing malarial infection and parasitic load, repeated doses during the second and third trimester are recommended, especially in areas of high HIV prevalence (Parise et al. 1998; Schulman et al. 1999; Schultz et al. 1994). Following the recommendation of WHO, the MNH Program promotes the following IPT practice: **All pregnant women in areas of stable transmission (and, where recommended, in areas of unstable transmission) should take a single dose of SP (three tablets, each containing 500 mg of sulfadoxine and 25 mg pyrimethamine) at each scheduled antenatal care visit after fetal movement begins (quickening), but not more frequently than monthly.** For

women experiencing normal pregnancies, the MNH Program promotes four scheduled antenatal care visits, including three after the first trimester, which allows for up to three doses of SP after quickening.

Insecticide-Treated Nets: ITNs kill and repel the mosquitoes that carry malaria, providing protection for both mothers and newborns. In areas of stable transmission, use of ITNs has been associated with lower prevalence of malaria infection and fewer premature births (D’Alessandro et al. 1996; Ter Kuile et al. 2003). Although ITNs are relatively inexpensive, their cost may be prohibitive for many of the women who need them. Various alternatives to commercial distribution of ITNs are being explored, including “bundling” ITNs and IPT together and providing them as a routine part of antenatal care, or providing vouchers for subsidized nets. For pregnant women who are unable to take SP, use of ITNs is the best and most appropriate intervention to avoid malarial infection. Based on the WHO guidelines, the MNH Program recommends the following practice for ITNs: **Women in areas of stable and unstable transmission should consistently sleep under an ITN, starting as early in pregnancy as possible, and should continue to do so with their newborns and young children.**

Education and Counseling: As another routine part of focused antenatal care, women should be given information and counseling on the dangers that malaria poses to them and their babies, and the steps they can take to protect themselves. These messages should address the importance of practices such as continuing antenatal care, receiving the next scheduled dose of IPT and iron/folate, sleeping under an ITN, and covering arms and legs in the evening. As part of their birth planning, the woman and her family should also receive assistance in developing a complication readiness plan that specifies exactly what to do if danger signs of malaria arise.

Case Management for Treating Malaria

Appropriate management should be available to all women with clinical cases of malaria. In endemic areas, screening for signs and

symptoms of malaria should be a routine part of antenatal care. Although malarial infection can be confirmed by a blood test, diagnosis is typically based on the presence of a fever (or recent history of fever) and consideration of the type of region (stable or unstable transmission) in which the woman lives. Providers should also diagnose and manage anemia in antenatal care clients (WHO 2001).

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 uncomplicated malaria. Management of uncomplicated malaria should include administration of antimalarials and iron/folate, as well as close monitoring. A woman with severe malaria may have a fever (or recent history of fever) with complications such as unconsciousness or convulsions, rapid or difficult breathing, severe vomiting and/or dehydration, weakness/fatigue, pulmonary edema, or hypoglycemia. Women with severe malaria need emergency care from a skilled provider. Care may include stabilization, administration of antimalarials, and blood transfusion and other life-saving measures.

Programming and Policy Support

The MNH Program promotes the approaches described above through its training and support of maternal and neonatal healthcare providers, through revising inservice and preservice training curricula to include the most up-to-date practices for the prevention and treatment of malaria during pregnancy, and through national and regional level policy work. The MNH Program also works with WHO and other international partners to effectively monitor and evaluate malaria during pregnancy programs.

For example, the MNH Program in **Tanzania** worked with the African Medical and Research Foundation and the Reproductive and Child Health Section of the Ministry of Health to develop guidelines on syphilis in pregnancy and the management of malaria during pregnancy under the umbrella of focused antenatal care. The *Focused Antenatal Care, Malaria and Syphilis in Pregnancy Orientation Package for Service Providers*, which is based on international standards of care and the WHO/AFRO *Strategic Framework*

for Malaria Control during Pregnancy in the WHO Africa Region, is being used to strengthen antenatal care in Tanzania through the development of related clinical standards and provider orientation and training.

For more information about the MNH Program, visit our website: www.mnh.jhpiego.org

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In **Burkina Faso**, the MNH Program worked with the Centers for Disease Control and Prevention (CDC) as well as the Burkina Faso National Center for Research and Training in Malaria to assess the burden of malaria during pregnancy in Koupéla district. The results of the assessment were used to stimulate national policy dialogue around malaria during pregnancy, which resulted in the implementation of a district-based pilot intervention of IPT with SP in Koupéla. The MNH Program in Burkina Faso conducted inservice training for antenatal care providers in the 23 facilities in Koupéla district, and the pilot will be evaluated between June and October 2004 in an effort to continue the policy dialogue around malaria during pregnancy.

The MNH Program also participates in a number of global and regional efforts to develop policies and support country-level implementation for the prevention and control of malaria during pregnancy. Perhaps foremost among these are the Roll Back Malaria (RBM) initiative, a partnership founded by WHO, United Nations Development Programme, UNICEF, and the World Bank; and the USAID-funded Malaria Action Coalition, which includes WHO, CDC, and the Rational Pharmaceutical Management Plus project.

Malaria during Pregnancy Resource Package: Tools to Facilitate Policy Change and Implementation

This resource package provides tools to help implement programs that will reduce malaria during pregnancy and provide effective treatment for pregnant women with malaria. Available in English and French at <http://www.mnh.jhpiego.org/resources/>

For CD-ROM or additional information, contact Matt Shugert at 410.537.1924 or mshugert@jhpiego.net.

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