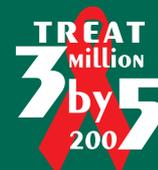




World Health Organization

MALARIA AND HIV/AIDS INTERACTIONS AND IMPLICATIONS: CONCLUSIONS OF A TECHNICAL CONSULTATION CONVENED BY WHO, 23 – 25 JUNE, 2004



Malaria and HIV are among the two most important global health problems of our time. Together, they cause more than four million deaths per year. Malaria accounts for more than a million deaths each year, of which about 90% occur in tropical Africa, where malaria is the leading cause of mortality in children below five years. Aside from young children, pregnant women are among the most affected by the disease. Constituting 10% of the overall disease burden, malaria places a substantial strain on health services and costs Africa about USD 12 billion in lost production each year.

Sub-Saharan Africa is also home to more than 29 million people living with HIV/AIDS. In 2003 in Africa, AIDS claimed the lives of an estimated 2.4 million people and over 600 000 children were newly infected with the virus. HIV/AIDS increasingly accounts for a large proportion of mortality among children under five years in heavily affected countries. By taking its greatest toll on its young and most productive generation, HIV/AIDS hinders sustainable development in Africa.

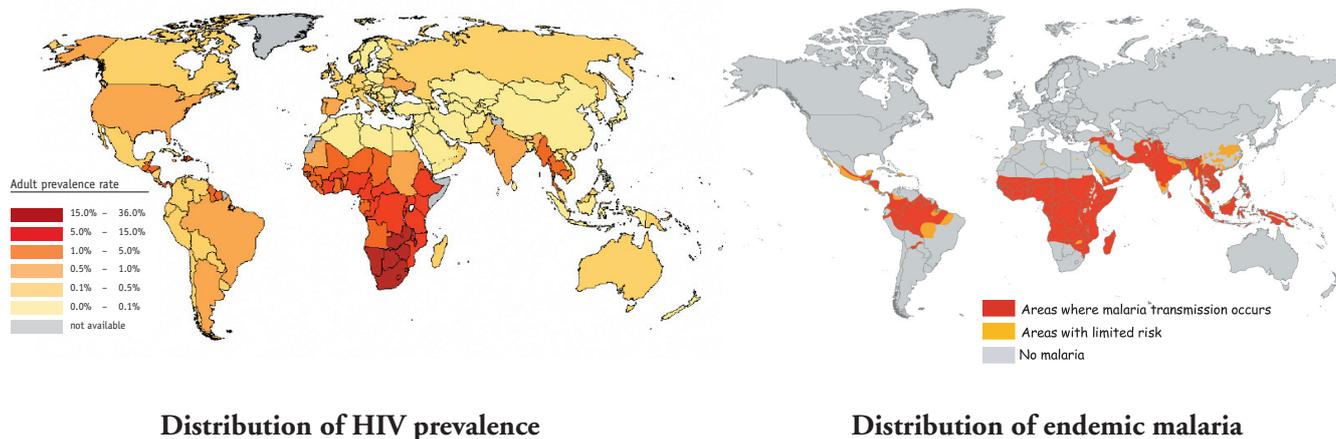
Malaria and HIV/AIDS are both diseases of poverty and causes of poverty and they share determinants of vulnerability. Given the wide geographic overlap in occurrence and the resulting co-infection, the interaction between the two diseases clearly has major public health implications (see Figure).

RECENT STUDIES ILLUSTRATE IMPORTANT INTERACTIONS

There is a growing body of knowledge on the interactions between HIV/AIDS and malaria. The consequences of such interactions are particularly serious for reproductive health (see Box 1). Co-infected pregnant women are at very high risk of anaemia and malarial infection of the placenta. As a result, a considerable proportion of children born to women with HIV and malaria infection have low birth weight and are more likely to die during infancy. It is unclear whether malaria during pregnancy increases the risk of mother-to-child transmission of HIV, as studies examining this relationship have shown conflicting results.

Among adult men and non-pregnant women, HIV/AIDS may augment the risk of malarial illness, especially in those with advanced immunosuppression. In areas of unstable malaria transmission, HIV-infected adults may be at increased risk of developing severe malaria. HIV-infected adults with low CD4 cell counts may also be more susceptible to treatment failure of antimalarial drugs. Furthermore, acute malaria episodes temporarily increase viral replication and hence HIV viral load. As an important cause of anaemia, malaria frequently leads to blood transfusions, which is a potential risk factor for HIV infection (see Box 2).

Figure. HIV/AIDS and malaria are highly endemic, and there is wide geographic overlap in sub-Saharan Africa. Among the most severely affected countries are Cameroon, Central African Republic, Malawi, Mozambique and Zambia where more than 90% of the population is exposed to malaria and HIV prevalence (among adults 15-49 years of age) is above 10%. Outside Africa, the two diseases overlap in certain at-risk groups in South-East Asia and South America, and in several Indian cities such as Mumbai.



BOX 1

MODELLING THE ESTIMATED NUMBER OF ADDITIONAL PREGNANT WOMEN WITH MALARIA DUE TO HIV

In areas with stable transmission in sub-Saharan Africa, approximately 25 million pregnant women are exposed each year to malaria. Of these, about 10.5 million become infected with malaria in the second or third trimester. HIV-infected pregnant women are more likely to develop clinical malaria. It is estimated that if the average HIV prevalence among pregnant women in sub-Saharan Africa is about 9%, an additional 500 000 women will have malaria infection during pregnancy. As HIV prevalence increases, the number of malaria cases during pregnancy attributable to HIV increases as well. In light of the high prevalence rates of both HIV and malaria in most severely affected countries, the extent of this interaction and its serious consequences for reproductive health become apparent.

AN INTEGRATED APPROACH TO THE DELIVERY OF HEALTH SERVICES RELATING TO MALARIA AND HIV

In order to reduce the lethal consequences of dual infection with HIV and malaria, prevention and treatment programmes of the two diseases must mutually reinforce each other. There is immense potential for synergism, in particular at a time of growing political and financial commitment to reduce the burden of HIV/AIDS, malaria and tuberculosis. The Technical Consultation convened by WHO agreed on the following key recommendations:

1. As people living with HIV/AIDS in areas of malaria transmission are particularly vulnerable to malaria, their protection by insecticide-treated nets has high priority.
2. HIV-positive pregnant women at risk of malaria should always be protected by insecticide-treated nets, and in addition - according to the stage of HIV-infection - receive either intermittent preventive treatment with sulfadoxine-pyrimethamine (at least three doses) or daily cotrimoxazole prophylaxis.
3. Programmes for control of the two diseases should collaborate to ensure integrated service delivery, in particular within the framework of reproductive health services, and at peripheral health services, where the provision of better diagnostic tools for both diseases, antiretroviral treatment and more effective antimalarial medicines should be undertaken in cooperation.
4. Additional research on interactions between antiretroviral and antimalarial drugs is urgently needed.

BACKGROUND INFORMATION

The presentations from the Technical Consultation summarizing the scientific evidence pertaining to the interactions between malaria and HIV/AIDS can be viewed and downloaded at www.mosquito.who.int/malaria_HIV

Further information can be requested from rbm@who.int and hiv-aids@who.int.

BOX 2

OVERVIEW OF THE INTERACTIONS BETWEEN HIV AND MALARIA

Type of interaction	Pregnant women	Children	Adult men and non-pregnant women
The effect of HIV on Malaria			
- Increased risk of infection with malaria	+	?	+
- Increased malaria parasite density	+	?	+
- Decreased response to standard antimalarial treatment	+	?	+
The effect of Malaria on HIV			
- Increased HIV viral load			
- Increased risk of HIV transmission	+ ? ⁽¹⁾	? + ⁽²⁾	+ ?
Effects of dual infection			
- Increased risk of illness	+	+	+
- Increased risk of anaemia	+	+	+
- Increased risk of low birth weight	+	-	-

Key for footnotes and signs:

- + Evidence for interaction available
- ? Lack of direct evidence or data
- Interaction is not applicable
- ⁽¹⁾ Through mother-to-child transmission
- ⁽²⁾ Through unscreened blood transfusions to treat anaemia