

Summary of the Ninth Meeting of the ITFDE (II)
May 12, 2006
(revised)

The Ninth Meeting of the International Task Force for Disease Eradication (ITFDE) was convened at The Carter Center from 9:00am to 3:00pm on May 12, 2006. The Task Force reviewed the status of malaria control in three countries of the Americas.

The Task Force members are Dr. Olusoji Adeyi, The World Bank; Sir George Alleyne, Pan American Health Organization (PAHO); Dr. Julie Gerberding, Centers for Disease Control and Prevention (CDC); Dr. David Heymann, World Health Organization (WHO); Dr. Donald Hopkins, The Carter Center (Chair); Dr. Adetokunbo Lucas, Harvard University; Professor David Molyneux, Liverpool School of Tropical Medicine; Dr. Mark Rosenberg, Task Force for Child Survival and Development; Dr. Harrison Spencer, Association of Schools of Public Health; Dr. Pascal Villeneuve, UNICEF; Dr. Dyann Wirth, Harvard School of Public Health, and Dr. Yoichi Yamagata, Japan International Cooperation Agency (JICA). Six of the Task Force members (Adeyi, Hopkins, Lucas, Molyneux, Wirth, Yamagata) attended this meeting, and three others were represented by an alternate (Ms. Lisa Hayes for Rosenberg, Dr. Kopano Mukelabai for Villeneuve, Dr. Laurence Slutsker for Gerberding).

Malaria Control

The presentations on malaria were given by Dr. Marie Denise Milord (Haiti), Ing. Angel T. Solis-Montero (Dominican Republic), and Dr. Hector M. Ramos-Hernandez (El Salvador). Dr. Jorge F. Mendez-Galvan of Mexico was unable to attend, but sent a copy of his presentation.

Malaria is a parasitic disease transmitted by mosquitoes that causes over 300 million clinical cases and more than one million deaths per year, with some 80% of the cases and over 90% of the deaths occurring in sub-Saharan Africa, mostly rural areas. Mortality is greatest among two especially vulnerable groups: pregnant women and children under the age of five years. In Africa alone, malaria is responsible for an estimated 25%-35% of outpatient visits, 20%-45% of hospital admissions, 1%-4% reduction in Gross Domestic Product, or economic losses of up to US\$12 billion per year. In the western hemisphere, malaria is still a problem in 19 countries of Central and South America, and two countries in the Caribbean (the Dominican Republic and Haiti).

Haiti

Malaria is transmitted year round in Haiti (population 8 million), in almost all of the country (up to 600 meters above sea level), especially in flat, rice growing areas. The entire population is at risk of malaria. Urban areas are affected as much as rural areas. A

total of 19,680 cases were diagnosed officially in 2005 (partial reports, for 7 of the country's 10 departments), including an outbreak in November – all of them caused by the deadly *P. falciparum*. The number of deaths from malaria in Haiti is unknown, but under-reporting is believed to be significant, due to inadequate facilities, personnel and equipment. The malaria parasite is still sensitive to chloroquine. The vector concerned is *Anopheles albimanus*.

There was a lapse of nearly 20 years without an active anti-malaria program in Haiti until recently. A five-year project funded by the Global Fund for HIV/AIDS, Tuberculosis and Malaria in the amount of \$14.8 million began in January 2005. This project is a collaborative effort of the Ministry of Health and eleven non-governmental organizations (NGOs), with technical assistance and support by the Pan American Health Organization/World Health Organization (PAHO/WHO), the Centers for Disease Control and Prevention (CDC), the French Cooperation and UNICEF. The first phase of the project, which seeks to strengthen coordination, epidemiological surveillance, clinical management, prevention, and capacity for laboratory diagnosis, covers three of the country's 10 departments. Interventions at present include treatment of patients with chloroquine, and a small amount of larviciding of breeding sites. Increased vector control is planned for phase II of the project, but no indoor residual spraying is being done now. Some impregnated bed nets were distributed during the outbreak in November 2005. A total of 60,000 impregnated bed nets were ordered in early 2006; all but 5% of which are to be "socially marketed" (the other 3,000 to be distributed free by the Ministry of Health). Impregnated bed nets are popular in Haiti. Artemisinin Combination Therapy (ACT) has not been considered in this program. Physical infrastructure and human capacity are both seriously limited. Virtually all funding for malaria control is from external assistance.

At least 117 of Haiti's 135 communes are also affected by lymphatic filariasis (LF), which is transmitted by the mosquito vector *Culex quinquefasciatus*. Mass drug administration for LF control is being conducted in about 25 of the highest endemic communes, with funding provided by the Bill & Melinda Gates Foundation in 2001-2005, and technical assistance provided by CDC, the University of Notre Dame, and PAHO/WHO. LF control will be added to the second phase of the Global Fund project.

Dominican Republic

Malaria is transmitted year round in the Dominican Republic (population 9 million), mostly in certain rural areas in the southeast and west of the country. It is associated with indigenous Dominican and immigrant Haitian agricultural laborers (mostly sugar cane) and construction workers. Of the 2,354 cases officially reported in 2004, 1,547 were reported from only four provinces (Bahoruco, Barahona, La Altagracia and Azua), while 1,670 patients were Dominican nationals and 667 were nationals from neighboring Haiti. About two-thirds of cases are in males. Outbreaks are sometimes associated with hurricanes. About 99% of cases are caused by *P. falciparum*. Resistance of the parasite to chloroquine has not yet been found. The vector is *Anopheles albimanus*, as in Haiti.

Malaria is a serious health problem and also a major economic problem in the Dominican Republic. News of an outbreak in late 2004 that also affected a few tourists caused an estimated \$200 million in lost revenues from the tourist industry. Malaria control is thus a national priority.

Interventions include detection of cases by active and passive surveillance and laboratory diagnosis, treatment with chloroquine and primaquine (including presumptively), indoor residual spraying for selected situations (e.g., areas with high-incidence, or where other vector control measures cannot be applied), use of bio- (*Bacillus thuringensis*, *B. sphaericus*) and chemical larvicides, and monitoring for resistance of the parasites to chemotherapy and of the mosquitoes to insecticides. CDC is helping to monitor for resistance to insecticides, including DDT. The national program coordinates involvement of many related agencies and sectors in malaria control. No funding has been provided by the Global Fund despite a request for such funding. The Government of the Dominican Republic funded over 96% of the national malaria budget of \$463,930 in 2004.

Lymphatic filariasis is also endemic in sporadic foci, including two provinces at highest risk for malaria in the southern part of the country.

El Salvador

Endemic malaria has been nearly eliminated from El Salvador (population 6.7 million), although about 41% of the national population is still at risk of the disease. The number of reported cases has declined drastically from approximately 100,000 cases in 1980 to about 100 cases annually in 2002-2004. Only 41 cases of malaria (40 *P. vivax*, 1 *P. falciparum*) were reported in 2005, and 17 of those were imported in immigrants from neighboring Central American countries, which continue to suffer much higher levels of endemicity than El Salvador. The mosquito vector of malaria in El Salvador is *Anopheles albimanus*.

Interventions against malaria began in El Salvador in 1932 with assistance from the Rockefeller Foundation. A network of village-based “voluntary collaborators” began to educate, take blood smears, and give presumptive treatment in 1956. Integrated control measures, including mass treatment, larviciding, indoor residual spraying and source reduction, decentralized diagnosis and treatment, and community participation, have been implemented for the past twenty-five years. The most commonly used drugs for treatment are chloroquine and/or amodiaquine, and primaquine. The Government of El Salvador funded over 99% of the national malaria budget (\$3 million, including \$2 million in human resources) in 2005. As the incidence of malaria declines, it is increasingly difficult to maintain local capacity to control the disease.

Mexico

Mexico has made good progress towards malaria control, with half of the country's 32 provinces now considered free of the disease. This program has had a strong emphasis on focalized treatment, environmental sanitation, and source reduction. However, the program was not discussed in detail, because of Dr. Mendez's inability to attend.

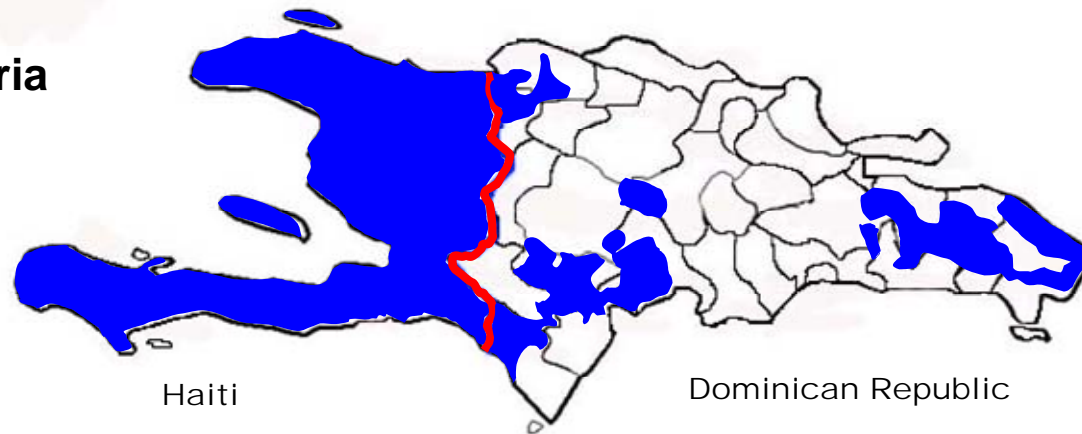
Conclusions and Recommendations

1. The logic of a sub-regional approach to elimination of malaria in the Americas, beginning with the island of Hispaniola (Haiti and Dominican Republic) is compelling. *P. falciparum* malaria is an important health problem and a significant economic burden in Haiti and the Dominican Republic, the main vector (*A. albimanus*) is relatively inefficient, and chloroquine is still effective in both countries. Hispaniola is the only remaining focus of endemic malaria in the entire Caribbean, and it contains 95% of lymphatic filariasis (which is also transmitted by mosquito vectors and thus is vulnerable to vector control measures) in all of the Americas. Like malaria, lymphatic filariasis is a significant medical and economic burden in Haiti. Eliminating malaria from Hispaniola would also eliminate a substantial risk of imported malaria to all other Caribbean islands and to the USA.
2. The Task Force concluded that an *integrated comprehensive* program to *eliminate both malaria and lymphatic filariasis* from the *entire island of Hispaniola* is technically feasible, medically desirable, and would be economically beneficial to the Dominican Republic and Haiti. Such an initiative would require close cooperation and coordination between the governments of the two countries, as well as intelligent technical and financial assistance from interested external partners.
3. El Salvador and Mexico have already demonstrated substantial progress in their national malaria control programs. The main threat to these countries is in continuing importation of cases of malaria from other Central American countries where control programs have not been so successful.
4. Haiti and the Dominican Republic are urged to cooperate in malaria and lymphatic filariasis elimination, by convening regular bilateral meetings of appropriate health officials, with coordination of joint mapping, epidemiologic investigations, evaluation and monitoring, drug treatment policies, etc.
5. The ITFDE is unanimous in its emphatic opinion that long-lasting impregnated bed nets (LLINs) should be distributed free of charge as quickly as possible to the entire population of Haiti, which is the poorest country in the Americas and suffers substantially from *P. falciparum* malaria. If the average household size is 5 persons, at two LLINs per household, Haiti requires approximately 3.2 million LLINs to protect the population at risk.

6. For maximum effectiveness, insecticide treated bed nets should be complemented by other vector control measures, such as focal residual insecticide spraying, larviciding, and source reduction.
7. Haiti, the Dominican Republic, and their external partners, including the Pan American Health Organization, should weigh the potential benefits and costs of using artemisinin-combination therapy (ACTs). ACTs have a greater transmission-blocking effectiveness than chloroquine and other anti-malarial drugs. (Since no chloroquine resistance has been found in the sub-region, Haiti, the Dominican Republic, and all neighboring countries in Central America follow WHO/PAHO guidelines and use chloroquine as their first line drug.) A combined regimen of chloroquine and primaquine (as done in the Dominican Republic) would provide the transmission blocking capacity also found in ACTs, and would allow Haiti and the Dominican Republic to keep ACTs in reserve until their use is fully justified.
8. Regional leadership is needed on this issue, and the Pan American Health Organization/World Health Organization (PAHO/WHO) should most naturally fill that role. Among the potential initiatives are advocacy (using the effective program in El Salvador as an example), promotion of operational research (e.g., impact of migratory workers, epidemiology and strategy of malaria elimination, costs of epidemic preparedness and control), coordination of a joint proposal for integrated malaria and lymphatic filariasis elimination to the Global Fund by Haiti and the Dominican Republic, and facilitation of appropriate sub-regional meetings.
9. The Task Force suggests consideration of a phased approach to sub-regional elimination, with Hispaniola in Phase 1 and Central America in Phase 2.

Prevalence of Malaria and Lymphatic Filariasis on the Island of Hispaniola

Malaria



Lymphatic Filariasis

