

CDC's Malaria Research



CDC's Contributions to Malaria Research

CDC has been a leader in the fight against malaria more than 60 years, ever since the agency's early days as a federal program that led the successful elimination of malaria from the United States. Building on that success, CDC experts have continued to develop and evaluate malaria control interventions to reduce the impact of malaria and ultimately to eliminate malaria from all countries. CDC scientists provide critical scientific innovations to help guide the agenda for future public health efforts and monitor and evaluate progress toward global malaria goals.

CDC's innovative research has helped develop and evaluate effective prevention and control tools used by the President's Malaria Initiative and its global partners:

- Insecticide-treated bed nets (ITNs)(see box)
- Intermittent preventive treatment for pregnant women (IPTp)
- Artemisinin-containing combination therapies (ACTs)

CDC has also helped improve global malaria prevention and control through

- Monitoring and evaluation to help measure and assess progress in achieving public health goals
- Direct technical assistance to global multilateral organizations, Ministries of Health, and applied research institutions in malaria-endemic countries
- Training to improve U.S. and host country malaria expertise



Insecticide-Treated Bed Net Trial in Western Kenya

CDC's research in Kenya 1997 – 2002, conducted in collaboration with the Kenya Medical Research Institute (KEMRI), demonstrated that insecticide-treated bed nets (ITNs) could reduce deaths and illness due to malaria in areas of very intense, year round malaria transmission. This groundbreaking study also showed that if enough people in a malaria-endemic community were protected with ITNs, the overall number of mosquitoes would be reduced and even individuals in neighboring households without a mosquito net could be protected from becoming infected.

Current CDC Research

Critical research questions must be answered to guide both near- and medium-term U.S. Government investments in malaria control. CDC's research efforts focus on optimizing current interventions, documenting the impact of new and revisited interventions, and developing opportunities for integration of interventions.

CDC, along with our global collaborators, is conducting research in these areas:

- Interaction of interventions: Can indoor residual spraying (IRS), when used in combination with ITNs, decrease the malaria burden; alternatively, can high ITN use help reduce the number of IRS rounds needed for sustained transmission reduction?
- Access to interventions: How do malaria control programs make sure that the effective tools reach poor remote communities and individuals who need them most?
- Quality of interventions: How can malaria control programs maintain highly effective interventions, like ITNs, IRS, and early treatment, once they achieve their current goals?
- Improved diagnosis: How can we best strengthen the role of rapid diagnostic tests and other diagnostic methods in malaria control and elimination efforts?
- New tools: How can new malaria treatments, diagnostic tools, and vaccines contribute to malaria control and elimination in the next 5 – 10 years? What new ways for controlling mosquitoes, both inside and outdoors, will be needed to eliminate malaria?

A Congressional Mandate

Recognizing CDC's strengths, Congress under the Lantos-Hyde Act 2008 has asked CDC to "advise the U.S. Government Malaria Coordinator on priorities for operations and implementation research" and "on monitoring, surveillance, and evaluation activities" and "to be a key implementer of such activities."

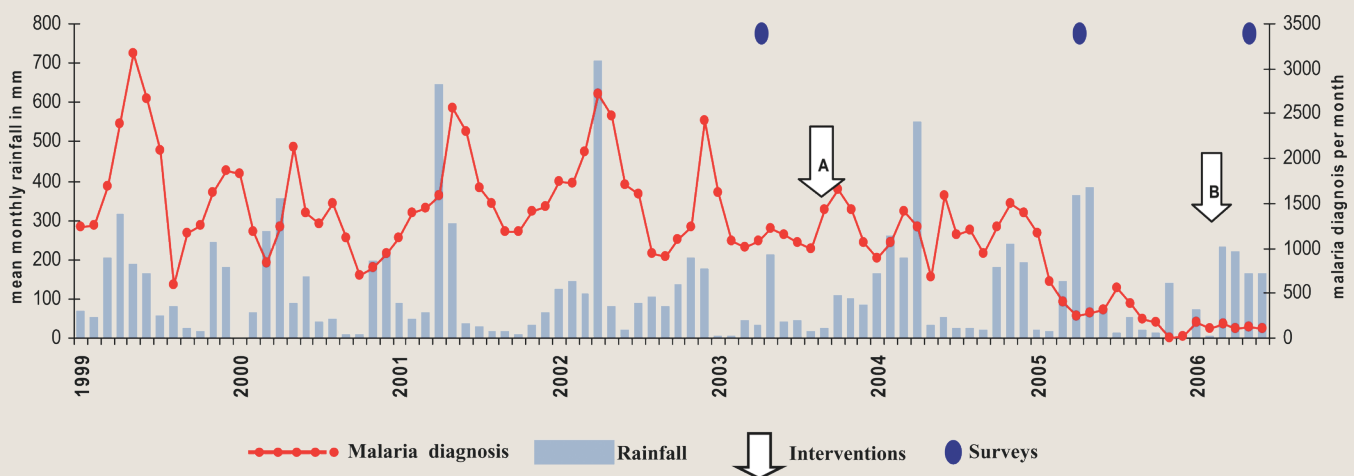
Surveillance and Monitoring & Evaluation

CDC is working to determine the most efficient ways to track the progress of malaria control and elimination, identify setbacks, and respond rapidly when needed, as well as to determine if such tools also measure public health impact.

Investment in monitoring and evaluation systems provides the data needed to measure the impact of the U.S. Government's malaria control investments, but also to build local capacity—necessary for the long-term success of malaria control efforts.

An example of a next-generation malaria surveillance system is in Zanzibar, part of the United Republic of Tanzania. In collaboration with the Ministry of Health and Social Welfare, CDC, through PMI, has embarked on a new public-private partnership with a local telecommunications provider to develop a real-time surveillance system that provides weekly reports of confirmed malaria by cell phone. If an unusual increase in malaria cases is detected, a rapid response is initiated. As malaria prevalence is reduced, early warning systems will be increasingly needed.

Malaria diagnoses in children in Zanzibar decrease dramatically after introduction of two interventions: ACTs (A) and long-lasting insecticide-treated nets (B)



Bhattarai A, Ali AS, Kachur SP, Mårtensson A, Abbas AK, et al. 2007 Impact of Artemisinin-Based Combination Therapy and Insecticide-Treated Nets on Malaria Burden in Zanzibar. *PLoS Med* 4(11): e309. doi:10.1371/journal.pmed.0040309

For more information, see cdc.gov/malaria or email malaria@cdc.gov

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