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Global Trends: Malaria

The United States has supported global malaria control efforts since the 1950s, including through the President's Malaria Initiative (PMI) since 2005.

Global Trends

According to the World Health Organization (WHO), roughly half of the world population (3.2 billion people) is at risk of contracting malaria, a life-threatening disease caused by parasites transmitted through bites of infected mosquitoes. Malaria is preventable and curable, though in some regions malaria parasites are developing resistance to drug treatments and pesticides. From 2000 to 2016, WHO recorded significant progress in combatting malaria in endemic areas. However, data from the 2018 WHO World Malaria Report showed that progress in reducing global malaria cases has stalled in recent years.

Malaria: Disease Burden and Global Trends

In 2017:

- Malaria cases numbered 219 million, up from 217 million in 2016.
- 435,000 people died from malaria, of which 61% were children younger than five years old.
- Africa had 92% of global malaria cases (201 million cases).
- Southeast Asia accounted for 5% of global cases (about 11 million cases), 80% of which occurred in India (8.8 million cases).
- Increased transmission rates in Brazil, Nicaragua, and Venezuela heightened the number of new malaria cases in South and Central America.
- 80% of children with malaria also tested positive for anemia, which is a risk factor for malaria.

From 2010 to 2017:

- The absolute number of malaria deaths worldwide decreased by 172,000.
- The incidence rate of malaria cases in the WHO Southeast Asia region decreased by 59%.

Source: WHO World Malaria Report, 2018, <https://www.who.int/malaria/publications/world-malaria-report-2018/en/>.

Malaria is concentrated in the poorest regions of the world, where individuals in malaria-prone rural areas often live in informal dwellings that have few barriers against mosquitoes. Some experts contend that, because malaria has severe effects on a person's body—such as fatigue, diarrhea, vomiting, and nausea—serious socioeconomic impacts can follow, contributing to slowed economic growth and development, thereby perpetuating poverty cycles.

Malaria Prevention and Treatment

The four strategies commonly thought to be most effective to combat malaria are listed below.

1. Treatment with antimalarial drugs may include chloroquine, primaquine, and artemisinin-based combination therapy (ACT). ACT is preferred for treating particularly deadly forms of malaria, or in areas with resistance to earlier generations of antimalarial drugs.

2. Intermittent Preventive Treatment in Pregnancy (IPTp) involves routinely administering antimalarial treatments to pregnant women to prevent transmission of the disease to their infants. Coverage and treatment adherence are a problem; currently, 22% of pregnant women in 33 Sub-Saharan countries receive all three necessary antimalarial doses.

3. Insecticide-treated bed nets, if used in high volume in a community, can reduce malaria transmission. Mass bed net distribution is the most commonly used preventive intervention globally, with 220 million nets distributed in 2017, up from 144 million in 2010.

4. Indoor residual spraying covers household walls with an insecticide to kill mosquitos that come into contact with them. Maximum efficacy is achieved when at least 80% of walls within a dwelling are sprayed. The WHO estimates that resistance to the four commonly used insecticides is widespread in all malaria endemic countries, and it identifies insecticide resistance management strategies as a necessary component of country-level malaria control programs.

Recent Developments

The WHO estimates that global malaria control efforts have helped reduce malaria deaths by more than 60%, saving almost 7 million lives and preventing more than 1 billion malaria cases between 2000 and 2015. Factors likely to affect future malaria developments are discussed below.

Research & Development (R&D)

Scientists are researching the development of an effective malaria vaccine. The most promising vaccine is being developed through a partnership between GlaxoSmithKline (GSK) and the Malaria Vaccine Initiative (MVI); late stage clinical trials are underway in Ghana, Kenya, and Malawi. The trials are being implemented in 2019 by the WHO, in partnership with relevant ministries of health, and GSK. During the trial, the vaccine halved the number of malaria cases among children. Widespread use of the vaccine is limited, however, by its short-term effectiveness and the need to administer several injections.

International Coordination

Multilateral and U.N.-aided efforts to counter malaria are guided by the WHO *Global Technical Strategy for Malaria 2016-2030*. In 2018, the WHO launched a substrategy that seeks to intensify response efforts in the highest burden countries. Roughly 44% of donor funding for malaria is provided by the multilateral Global Fund to Fight AIDS, Tuberculosis and Malaria, to which the United States is the lead donor. Other actors working to counter malaria include the World Bank and the public-private Roll Back Malaria Partnership.

Funding Levels

The WHO estimates that, in order to meet the 2030 targets of the Global Technical Strategy, \$6.6 billion of annual global funding is needed over the next decade (more than double the 2017 amount of global funding). In 2017, 28% of funding for antimalaria activities came from malaria-endemic countries. The WHO states that domestic financing is necessary to the global response but does not specify an amount that malaria-endemic countries should contribute to antimalaria efforts.

U.S. Government Response

The U.S. government is the largest single donor to antimalaria activities worldwide. Through bilateral programs and contributions to the Global Fund and other stakeholders, the United States provided 39% (\$1.4 billion) of the \$3.1 billion spent on malaria control in 2017.

Congress funds global malaria efforts primarily through the Global Health Programs Account in annual State and Foreign Operations Appropriations. Malaria research efforts by other U.S. agencies and departments, including the Centers for Disease Control and Prevention (CDC), Department of Defense (DOD), and National Institutes of Health (NIH), also complement PMI efforts. PMI funding displayed in **Table 1** does not include these other funds.

Table 1. President's Malaria Initiative (PMI) Appropriations, FY2009-FY2019

(current U.S. \$ millions)

Fiscal Year	Appropriated Amount
FY2009	\$300
FY2010	\$500
FY2011	\$578
FY2012	\$604
FY2013	\$608
FY2014	\$619
FY2015	\$619
FY2016	\$621
FY2017	\$723
FY2018	\$755
FY2019	\$755

Source: CRS table created from pmi.gov data, and the Consolidated Appropriations Act 2019, P.L. 116-6. Figures in current U.S. dollars.

President's Malaria Initiative (PMI). In 2005, the George W. Bush Administration launched PMI, committing to halve malaria-related mortality in 15 high-burden countries within five years. The Tom Lantos and Henry J. Hyde

United States Global Leadership Against HIV/AIDS, Tuberculosis, and Malaria Reauthorization Act of 2008 (P.L. 110-293) reauthorized a budget expansion of up to \$5 billion over five years to fund PMI, and expanded U.S. programs to counter malaria. The Lantos-Hyde Act also called for a comprehensive U.S. Global Malaria Strategy and mandated the establishment of a U.S. Global Malaria Coordinator to lead PMI. PMI has released two malaria strategies since then (the first for 2009-2014, and the second for 2015-2020) and has expanded its activities to include 24 countries in Sub-Saharan Africa and the Greater Mekong Subregion in Asia. For example, in 2017, PMI-funded spraying protected over 21 million people. The latest strategy accounted for progress made under the previous strategies and aligned PMI goals with the vision of ending preventable child and maternal deaths, as well as extreme poverty. It set several targets for the 24 PMI-supported countries, including

- 33% reduction in malaria mortality from 2015 levels,
- at least 80% reduction in malaria cases compared to 2000 baseline levels, and
- 40% reduction in malaria morbidity from 2015 levels.

The U.S. Global Malaria Coordinator leads PMI from the U.S. Agency for International Development (USAID). An Interagency Advisory Group, which includes representatives from USAID, CDC, the State Department, the National Security Council (NSC), and the Office of Management and Budget (OMB), provides technical guidance to the PMI Coordinator.

Through PMI, the United States supports the aforementioned malaria prevention and control efforts and provides technical assistance in case management and surveillance. Improved monitoring and surveillance have reportedly been used to successfully advocate for increased national malaria budgets in some endemic countries. The data have also reportedly increased the effectiveness of malaria programs by facilitating strategic application of malaria interventions.

Considerations for Congress

In the 116th Congress, congressional attention may focus on funding issues related to the U.S. role in global antimalaria efforts. For example, in addition to setting funding levels, Congress may consider how funding to improve access to and uptake of lifesaving malaria interventions and tools could also address health systems strengthening efforts to improve early diagnosis and treatment in PMI target countries. Expanded R&D efforts to combat multidrug resistance could be another related global health priority.

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