

CDC Division of Parasitic Diseases and Malaria **STRATEGIC PRIORITIES**

2021–2025



Centers for Disease
Control and Prevention
Center for Global Health





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CDC works closely with the American Samoa Department of Public Health and other partners to eliminate lymphatic filariasis in American Samoa, the last U.S. territory with known transmission of the neglected tropical disease. In this photo, school children check in to take preventive medicines during a round of mass drug administration. Credit: Kimberly Won/CDC



CDC works with many partners, including the Haiti Ministry of Public Health and Population (MSPP), to implement mass drug administration for the elimination of lymphatic filariasis in Haiti. In this photo, children at a school in Port-au-Prince line up to take the medicines that will eliminate this debilitating neglected tropical disease. Credit: Tara Brant/CDC

Background and Introduction

CDC's Division of Parasitic Diseases and Malaria (DPDM) is guided by the same strategic framework that drives all of CDC's activities: use science and innovation to prevent, detect, and respond to public health threats.

Within that broad framework, DPDM focuses on diseases caused by parasites, including malaria, cyclosporiasis, Chagas disease, and other neglected tropical diseases (NTDs), among dozens of others.

Spread by the bite of an infected mosquito, triatomine bug, or blackfly, or perhaps from eating contaminated produce or passed from a mother to her baby, parasitic diseases are responsible for an enormous global burden of illness, disability, and death. In 2019, there were 229 million new malaria infections worldwide and 409,000 deaths, many of those children under five years of age. NTDs, including onchocerciasis, trachoma, and lymphatic filariasis (LF), affect more than one billion people globally.

However, despite their burden on global health, parasitic diseases are often overlooked or are not well known.

DPDM serves as the country's—and often the world's—last resort when it comes to parasitic disease diagnosis and treatment. When U.S. states or other countries lack the capacity to diagnose a rarely seen parasitic disease such as cysticercosis or African trypanosomiasis, they rely on DPDM to make the proper diagnosis. Just as important as getting the diagnoses right are DPDM's efforts to educate public health partners, healthcare providers, and the American people about the risks posed by parasitic diseases.

Our Strategic Priorities for 2021–2025 will help guide DPDM's core activities that are essential for the control of parasitic diseases in the United States and around the world. For the next four years, DPDM will prioritize activities that build on past and current achievements to maximize our impact.

Vision, Mission, and Values

- **Vision:**
A world free from parasitic diseases
- **Mission:**
Save and improve lives by controlling and preventing parasitic diseases in the U.S. and worldwide
- **Core Values:**
Our work is guided by a commitment to science, service, partnership, and stronger public health capacity, and to creating a supportive environment. We continually strive to:
 - **Apply science to improve public health.** We rigorously conduct research and apply the principles of laboratory, clinical, epidemiologic science, and related disciplines to address critical public health needs, translate research findings into policy guidance and program interventions, and evaluate the impact of public health programs.
 - **Provide service.** We share our technical expertise and public health experience with health partners and the public and strive to identify and address health needs and reduce the impact of parasitic diseases domestically and around the world.
 - **Engage in partnerships to achieve common goals.** We coordinate our activities in collaboration with a wide array of partners to more effectively and efficiently reduce the impact of parasitic diseases.
 - **Build public health capacity.** We work with domestic and global health partners to design, implement, and evaluate programs that monitor, prevent, and control parasitic diseases in order to strengthen overall health system performance, capacity, and sustainability.
 - **Provide a supportive, growth-oriented environment.** We value our staff and are committed to fostering a healthy, fair, and respectful workplace to enable our staff to reach their greatest potential and our work to have its greatest impact.

Strategic Goals

CDC will work with domestic and global partners towards three strategic goals over the next five years:

1. Ensure prevention, diagnosis, and treatment of parasitic diseases in the United States
2. Reduce the global burden of malaria
3. Reduce the global burden of priority neglected tropical diseases (NTDs)

Strategic Goal 1: Ensure prevention, diagnosis, and treatment of parasitic diseases in the United States

Dozens of parasites cause serious health problems for Americans each year, including seizures, blindness, infertility, and heart failure. Our priorities for public health action are based on the numbers of people infected, the severity of the illnesses, or our ability to prevent and treat them. Four parasitic diseases, including malaria, are nationally notifiable in the United States, meaning CDC works with states to monitor the diseases to detect and respond to increases in the number of reported cases. We know that fast and accurate diagnosis is vital to effective treatment and improved health. CDC information and consultation to healthcare providers, laboratories, and the public helps to ensure appropriate diagnosis and treatment of parasitic diseases and helps prevent them when possible.

Objective 1. Ensure appropriate prevention of parasitic disease in the United States

- Produce, disseminate, support, and assess uptake of CDC guidance for the prevention of parasitic diseases in the United States
- Maintain the parasitic diseases hotlines to respond to inquiries from healthcare providers and public health partners regarding the prevention, epidemiology, diagnosis, and treatment of parasitic diseases

Objective 2. Improve timely diagnosis and appropriate treatment of parasitic disease in the United States

- Provide consultation; produce, disseminate, and assess guidance; and support diagnosis and treatment of parasitic infections, including cases of severe malaria, in the United States
- Provide otherwise unavailable drugs as appropriate for treatment of parasitic infections
- Provide reference diagnoses and pathogen characterization (e.g., testing for drug susceptibility) of parasitic diseases in the United States
- Develop new diagnostic tests that address gaps and improve diagnosis and characterization of parasitic pathogens and transfer these assays to both public and private diagnostic laboratories
- Provide training to U.S. laboratories to ensure capacity for timely diagnosis and characterization of parasitic diseases



Objective 3. Improve awareness and knowledge about parasitic diseases in the United States

- Develop and disseminate up-to-date, accessible educational materials and continuing education courses for healthcare providers
- Conduct proactive education and outreach on priority parasitic diseases including malaria and Chagas disease
- Develop and implement interventions such as awareness campaigns targeted to travelers (especially those visiting friends and relatives) with focus on pre-travel, travel, and post-travel steps to reduce risk of parasitic diseases

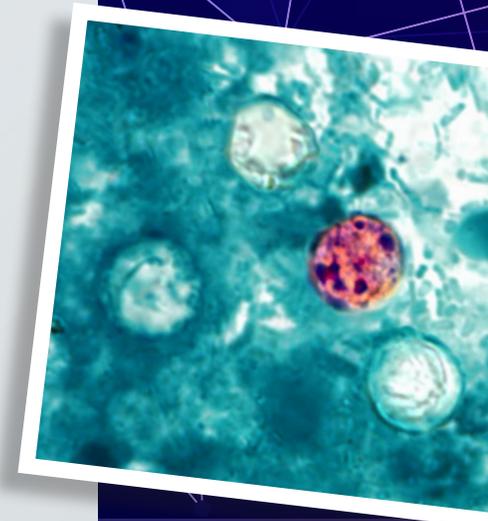
Objective 4. Improve public health response to parasitic disease cases and outbreaks in the United States

- Conduct and improve surveillance and reporting for four nationally notifiable diseases: malaria, babesiosis, cyclosporiasis, and trichinellosis
- Assess the burden of soil-transmitted helminths in the United States
- Identify Chagas disease vectors for state public health departments
- Assess trends and monitor impact of prevention and treatment efforts on rates and outcomes of parasitic infections
- Provide consultation to state and local health departments and other public health partners (e.g., blood banks) about parasitic diseases, including outbreaks and patient management
- Engage with external partners for outbreak investigations

Objective 5. Conduct research and advance promising interventions or tools to prevent or control parasitic diseases in the United States

- Conduct research on parasitic diseases in the United States to inform policy, including research on congenital Chagas disease screening, emerging parasitic diseases, and neglected parasitic infections
- Improve laboratory tools for cyclosporiasis and malaria diagnostics and surveillance and adopt Advanced Molecular Detection (AMD) methods for routine public health practice
- Engage with external partners for validation of novel diagnostic tools that they have developed

More than 300,000 people in the United States are infected with *Trypanosoma cruzi*, the parasite that causes Chagas disease—and most don't know it. CDC is working with partners to improve awareness among healthcare providers and populations at greater risk.



Strategic Goal 2: Reduce the Global Burden of Malaria

Every two minutes, a child dies of malaria. And each year, more than 200 million new cases of the disease are reported globally. Malaria remains a threat to U.S. travelers, the military, and to U.S. citizens living abroad. Prevention messages need to be reinforced, but global efforts to control or eliminate the disease help reduce the risk for everyone.

Objective 1. Optimize intervention packages to reduce malaria morbidity and mortality in high transmission settings

- Co-implement the U.S. President's Malaria Initiative (PMI), led by USAID
- Evaluate combinations of interventions—vector control, case management, and chemoprophylaxis—to rapidly and sustainably reduce transmission in high-burden areas
- Improve vector control through novel interventions—e.g., certain housing modifications, larval source management, tools to reduce outdoor biting, spatial repellents, attractive targeted sugar baits, and biologic/genetic modifications of mosquitoes—and assess modifications to enhance the effectiveness of existing interventions
- Improve access to and effectiveness of community case management
- Evaluate approaches to improve prevention and case management of malaria during pregnancy, infancy, childhood, and special populations
- Support development and evaluation of highly sensitive, next generation malaria rapid diagnostic tests and other diagnostics for case management of malaria
- Implement behavior change interventions to facilitate the uptake of malaria prevention and treatment behaviors
- Characterize the safety, effectiveness, and feasibility of malaria vaccines

CDC and partners, including through the U.S. President's Malaria Initiative, led by USAID, have helped save more than 7 million lives and prevented more than a billion cases of malaria since 2000.

Objective 2. Develop new and further optimize existing tools and strategies for countries or areas with lower transmission to accelerate malaria elimination.

- Develop and tailor risk stratification tools and guidance for different transmission settings



- Develop strategies to increase the number of people tested and treated for malaria
- Identify and describe factors that lead to successful elimination of malaria
- Develop tools to better understand and address the *Plasmodium vivax* parasite species that causes malaria
- Develop a strategic framework for the use of targeted mass drug administration (MDA) for malaria elimination
- Identify, pilot, and evaluate promising new tools and strategies for malaria elimination

Objective 3. Advance epidemiologic methods to monitor and measure impact of malaria prevention, detection, control, and response efforts

- Develop a framework to operationalize surveillance as a tool to inform and improve programmatic interventions, sometimes termed “surveillance as an intervention”
- Develop and employ evaluations of malaria program interventions and disseminate best practices for analyses using routine health facility reports
- To enhance ability to target malaria prevention resources, develop and expand availability of platforms for integrating and visualizing critical data sources, such as malaria disease surveillance, entomological reports, rainfall measurements, financial resources, and other relevant data
- Collect, analyze, and disseminate routine data for detecting and mitigating threats to malaria control and elimination efforts, including investigating factors that contribute to development and spread of drug-resistant parasites

Objective 4. Advance laboratory methods to monitor and measure impact of malaria prevention, detection, control, and response efforts

- Develop and analyze laboratory-based indicators for drug resistance monitoring, serosurveillance using multiplex assay, hrp2/3 gene deletion monitoring, and measuring multiplicity of infection
- Lead discovery and validation of *P. vivax* relapse infection biomarkers associated with hypnozoites and develop tools for the detection of infection due to relapse for surveillance
- Improve methods to quantify biological efficacy of insecticides
- Strengthen laboratory capacity for monitoring effectiveness of antimalarial drugs and insecticides, particularly within PMI countries



- Generate evidence on insecticide resistance mechanisms and patterns to inform vector control recommendations
- Improve detection and surveillance tools to better understand non-falciparum malaria to accelerate malaria elimination

Objective 5. Provide scientific leadership and expertise to advance global malaria control and elimination efforts and foster collaboration with public health partners

- Develop and disseminate global guidance for malaria control and elimination in collaboration with WHO and other global organizations, U.S. government partners, academic partners, and non-governmental organizations (NGOs)
- Maintain a world-class insectary and provide mosquitoes that spread malaria and other diseases as well as other materials to collaborators for research purposes
- Maintain WHO Collaborating Centers for malaria, trachoma, Guinea worm disease, and NTDs
- Provide technical support to and coordinate with global malaria partners and key stakeholders



Strategic Goal 3: Reduce the Global Burden of Neglected Tropical Diseases (NTDs)

Neglected tropical diseases (NTDs) cause devastating health and economic problems globally. Control and elimination programs, leveraging billions of dollars in donated drugs, have demonstrated the effectiveness of MDA as a key intervention for control and elimination of some NTDs. Programs need data to inform decisions about when to stop MDA and require effective surveillance approaches to detect any disease reoccurrence once MDA is stopped. New tools and approaches are needed, including diagnostics and surveillance methods.

Objective 1. Develop better diagnostic laboratory tests for public health surveillance of NTDs

- Optimize diagnostic tests currently used for monitoring NTD control, elimination, and eradication programs and develop and validate new tools
- Identify new antigens and develop novel diagnostic tests better suited for surveillance of NTDs
- Develop and maintain global repository of characterized reference banks for parasitic disease specimens

Objective 2. Develop new and further optimize existing tools and strategies to more effectively control NTDs; measure impact of NTD control, elimination, and eradication programs, and strengthen their implementation

- Identify approaches to improve coverage of mass drug administration (MDA) for LF, onchocerciasis, and schistosomiasis
- Develop and validate monitoring and evaluation protocols for NTD surveillance and intervention, including for onchocerciasis, LF, schistosomiasis, and Guinea worm disease
- Validate use of multiplex serology for NTD surveillance and scale up implementation
- Pilot test feasible and affordable strategies for post-validation surveillance for NTDs amenable to elimination through preventive chemotherapy (e.g. trachoma antibody test for post-validation surveillance)



Efforts to eliminate NTDs through the scale up of proven interventions has led to:

- 689 million people no longer requiring treatment for lymphatic filariasis
- Fewer than 30 human cases of Guinea worm infections in 2020
- 1.38 billion people no longer requiring treatment for trachoma

- Enhance methods for determining when to initiate, stop, or restart control activities for NTDs
- Evaluate schistosomiasis infection and morbidity (re-)mapping strategies

Objective 3. Support elimination of LF from American Samoa and Haiti

- Support elimination of LF in American Samoa
- Support elimination of LF in Haiti

Objective 4. Provide scientific leadership and expertise to advance global NTD elimination efforts and foster collaboration with public health partners

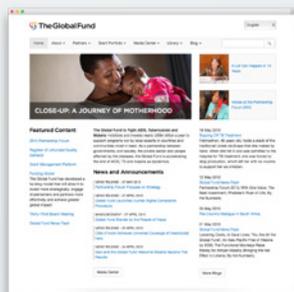
- Provide scientific leadership and technical input on global NTD policy development
- Provide parasitic diagnostic services globally through CDC's online, interactive parasitic diseases resources and trainings
- Continue to serve as a global resource center for innovative research into multiplex serology and support other countries' development of capacity for integrated serosurveillance
- Facilitate better data visualization for program decision making
- Provide technical support to partner countries and territories in their efforts to control and eliminate NTDs
- Provide scientific leadership in support of global efforts at NTD laboratory capacity building—including implementation of quality management systems—in countries' public health laboratories
- Provide leadership on WHO's Diagnostic Technical Advisory Group and disease-specific subgroups to improve monitoring, evaluation, and surveillance for NTDs



Children in American Samoa wait to participate in mass drug administration for lymphatic filariasis using the newly recommended triple-drug regimen of ivermectin, DEC, and albendazole.

The United States and Global Health Context

DPDM's work is aligned with multiple higher-level U.S. Government and global strategies, including those highlighted below.



The Global Fund to Fight AIDS, Tuberculosis, and Malaria

www.theglobalfund.org/en/

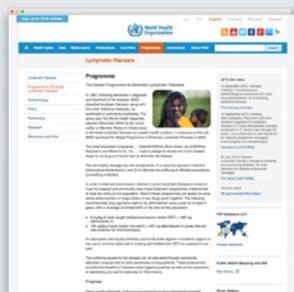
The Global Fund is a partnership designed to accelerate the end of AIDS, tuberculosis and malaria as epidemics. As an international organization, the Global Fund mobilizes and invests more than US\$4 billion a year to support programs run by local experts in more than 100 countries.



Global Health Security Agenda

www.cdc.gov/globalhealth/security/index.htm

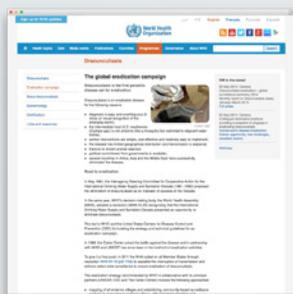
The Global Health Security Agenda (GHSA) is a global effort to strengthen the world's ability to prevent, detect, and respond to infectious disease threats. Sixty-seven countries have signed onto the GHSA framework, including the United States, which made a strong commitment to the initial five-year period of GHSA and continues to support its strategic priorities through GHSA 2024. The U.S. Centers for Disease Control and Prevention (CDC) plays a leading role in GHSA implementation for the United States by working directly with partner country governments to strengthen public health systems and reduce the risk of infectious disease outbreaks.



Global Program to Eliminate Lymphatic Filariasis

www.who.int/lymphatic_filariasis/disease/en/

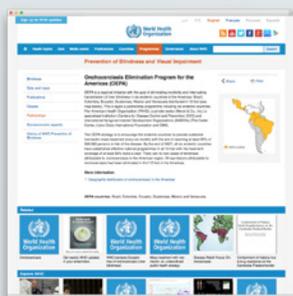
In 1997, following advances in diagnosis and treatment of the disease, WHO classified lymphatic filariasis, along with five other infectious diseases, as eradicable or potentially eradicable. The same year, the World Health Assembly adopted Resolution WHA 50.29, which called on Member States to initiate steps to eliminate lymphatic filariasis as a public health problem. In response to this call, WHO launched the Global Programme to Eliminate Lymphatic Filariasis (GPELF) in 2000. The elimination strategy has two components: (1) to stop the spread of infection (interrupting transmission); and (2) to alleviate the suffering of affected populations (controlling morbidity).



Guinea Worm Disease Eradication Program

www.who.int/dracunculiasis/eradication/en/

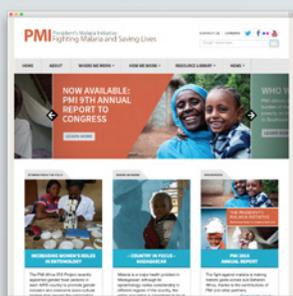
In 1981, the WHO's decision-making body, the WHA, adopted resolution WHA 34.25, which recognized that the International Drinking Water Supply and Sanitation Decade presented an opportunity to eliminate dracunculiasis (Guinea worm disease). This led to WHO and the CDC formulating the strategy and technical guidelines for an eradication campaign of dracunculiasis.



Onchocerciasis Elimination Program for the Americas (OEPA)

www.who.int/blindness/partnerships/onchocerciasis_oeпа/en/

OEPA is a regional initiative with the goal of eliminating morbidity and interrupting transmission of river blindness in six endemic countries in the Americas: Brazil, Colombia, Ecuador, Guatemala, Mexico, and Venezuela distributed in 13 foci. The OEPA strategy is to encourage the endemic countries to provide sustained ivermectin mass drug administration treatment every six months.



U.S. President's Malaria Initiative (PMI)

www.pmi.gov/

When launched in 2005, the goal of PMI was to reduce malaria-related mortality by 50 percent across 15 high-burden countries in sub-Saharan Africa through a rapid scale up of 4 proven and highly effective malaria prevention and treatment measures. In 2017, PMI's reach grew to 24 malaria-endemic countries in sub-Saharan Africa, including those with the highest burden, and three programs in the Greater Mekong Subregion of Southeast Asia. Under the PMI Strategy for 2015–2020, the U.S. Government's goal has been to work with PMI-supported countries and partners to further reduce malaria deaths and substantially decrease malaria morbidity, towards the long-term goal of elimination.



Rollback Malaria

www.rbm.who.int/

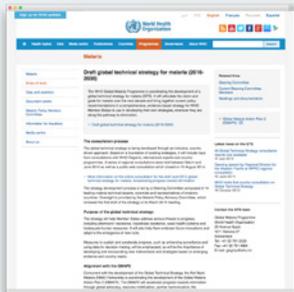
The Rollback Malaria (RBM) Partnership is the global framework to implement coordinated action against malaria. It mobilizes for action and resources and forges consensus among partners. The partnership comprises more than 500 partners, including malaria-endemic countries, their bilateral and multilateral development partners, the private sector, nongovernmental and community-based organizations, foundations, and research and academic institutions.



USAID's Neglected Tropical Diseases (NTD) Program

www.neglecteddiseases.gov/

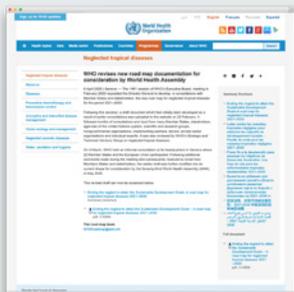
In February 2008, the Neglected Tropical Diseases Initiative was launched with a pledge to make available \$350 million over 5 years to deliver integrated NTD treatment to 300 million people in Africa, Asia, and Latin America. This program is making large-scale, cost-effective contributions to the global effort to reduce the economic and epidemiologic burden of NTDs.



WHO Global Malaria Technical Strategy

www.who.int/malaria/areas/global_technical_strategy/en/

The Global Technical Strategy for Malaria 2016–2030 was adopted by the World Health Assembly in May 2015. It provides a comprehensive framework to guide countries in their efforts to accelerate progress towards malaria elimination. The strategy sets the target of reducing global malaria incidence and mortality rates by at least 90% by 2030.



WHO Road Map for Neglected Tropical Diseases 2021-2030

<https://www.who.int/publications/i/item/9789240019027>

The aim of the new road map is to facilitate alignment among Member States and other stakeholders and to accelerate progress towards the prevention, control, elimination and eradication of the 20 NTDs and disease groups now prioritized by WHO and attaining the Sustainable Development Goals (SDGs).



U.S. Department of Health and Human Services
Centers for Disease Control and Prevention
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Division Of Parasitic Diseases and Malaria
www.cdc.gov/parasites