

# Saving Lives and Protecting People from Parasitic Diseases

## Why care about parasitic diseases?



Parasitic diseases cause devastating health and economic burden for hundreds of millions of people around the world and in the United States. These diseases can be transmitted to people by insects or animals, through blood or organ

donation, from mother to baby, or through contaminated food or water.

Malaria and a group of neglected tropical diseases (NTDs) are responsible for a large proportion of global deaths and illnesses from parasitic diseases. Targeted neglected tropical disease include those that can be controlled through mass drug administration or other simple, low cost interventions, namely lymphatic filariasis, onchocerciasis, schistosomiasis, trachoma, soil transmitted helminths, and Guinea worm disease.

Serious parasitic infections also occur in the United States, causing illness including seizures, blindness, infertility, heart failure, and even death.

## CDC's Division of Parasitic Diseases and Malaria: Translating science into action

As the nation's lead public health agency, CDC's Division of Parasitic Diseases and Malaria (DPDM) works to protect the health of Americans and the global community from parasitic diseases through evidence-based public health action.

CDC collaborate with a long list of domestic and international partners to prevent and control malaria, including co-implementing the President's Malaria Initiative (PMI); prevent, control, and eliminate NTDs; provide cross-cutting entomologic expertise and support; provide essential laboratory support to states, countries, and other partners; and conduct vital research and program evaluation.

Parasitic diseases can be transmitted through blood or organ transplants. CDC works with partners to develop recommendations for screening organ donors and recipients for parasitic diseases, such as Chagas disease and strongyloidiasis, and for monitoring and caring for individual recipients after transplant. This allows life-saving organs that would otherwise be discarded to be successfully received by critically ill patients.



## Did you know?

- Malaria caused **438,000** deaths and approximately **200 million** illnesses in 2015. There are an average of **1500** cases of imported malaria reported in the U.S. annually, mostly in returned travelers.
- There are **300,000** people living in the United States who are infected with the parasite that causes Chagas disease, and more than **300** infected babies are born **every year**. Toxoplasmosis, a leading cause of foodborne illness and death, chronically affects more than **60 million** people in the United States; of them, **8,400** develop eye disease and other complications each year.
- Neglected tropical diseases affect more than **1 billion people**—one-sixth of the world's population. These diseases perpetuate poverty by causing blindness, malnutrition, anemia, and disfigurement, despite the existence of simple, low-cost ways to control them.

## Here is how CDC is putting scientific expertise into action

### Reducing death, illness, and disability from parasitic diseases in the United States

CDC monitors rates of important parasitic diseases such as malaria, to be able to track trends and detect potential outbreaks in the United States.

CDC conducts epidemiologic studies to assess the impact of parasitic diseases and understand risk factors for acquiring them, develops recommendations to prevent and control these diseases, and educates the public and health care providers. In the United States five neglected parasitic infections (NPIs) — Chagas disease, neurocysticercosis, toxocariasis, toxoplasmosis, and trichomoniasis – are CDC public health priorities, based on the numbers of people infected, the severity of the illnesses, or our ability to prevent and treat them.

CDC provides consultations to health care providers on diagnosis and treatment when a parasitic infection is suspected and conducts confirmatory laboratory testing, including telediagnosis, as the national Parasitic Diseases Diagnostic Reference Laboratory. For some cases, DPDM releases life-saving treatments that are not commercially available, through the Parasitic Disease Drug Service. The Division's web-based diagnostic resource, DPDx, strengthens expertise in diagnosing parasitic diseases through online resources, transfer of technologies to state health departments and partners, and training.

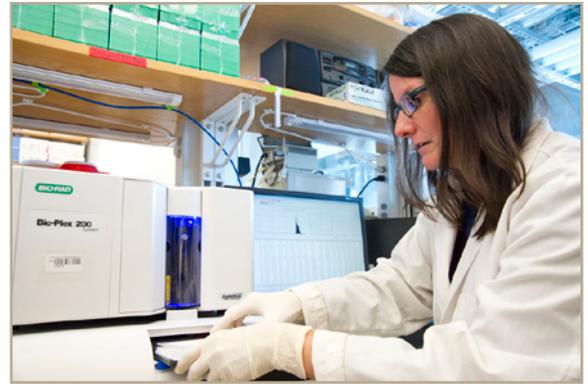
### Eliminating the global burden of malaria and targeted neglected tropical diseases\*

CDC provides expertise in diagnosis, treatment, surveillance, monitoring, and evaluation to other U.S. government agencies, endemic country programs, and other global partners— to inform and support parasitic disease control and elimination programs. For example, CDC partners with the World Health Organization (WHO) on development of policies and guidelines, quality management of malaria rapid diagnostic tests, and verifying elimination of disease transmission. CDC also conducts operational research to improve program delivery.

CDC co-implements the U.S. President's Malaria Initiative (PMI) led by the United States Agency for International Development (USAID), and has advisors in countries where PMI is working; and is a technical partner in the USAID Neglected Tropical Disease (NTD) Initiative. In addition, CDC is leading efforts to eliminate malaria and lymphatic filariasis from the island of Hispaniola by 2020; lessons learned will help inform elimination of these diseases, as well as NTDs, in other geographic regions.

### Advancing research to detect, prevent, and eliminate parasitic diseases

Building on evidence from CDC's and partners' research over the last two decades, global malaria and NTD prevention and control programs continue to implement and evaluate cost-effective interventions and scale-up efforts. To accelerate progress towards malaria and NTD elimination, CDC's current research supports the



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CDC helped to evaluate the RTS, S malaria vaccine, the most clinically advanced malaria vaccine candidate in the world. Results from across all trial sites, including CDC's work in Kenya, showed that vaccination with RTS,S followed by a booster, reduced the number of cases of clinical malaria by more than 1/3 in children vaccinated at 5-17 months of age.



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development and evaluation of new epidemiological and laboratory tools to manage and mitigate threats from drug and insecticide resistance, and demonstrate interruption of NTD transmission. This work informs program and policy decisions and builds the research capacity of host country governments through strategic partnerships.

As part of this research, CDC maintains a global parasitic disease reference insectary. This insectary enables researchers to study how mosquitos and other insects transmit disease and develop new and refine current vector-control interventions to facilitate successful field implementation. In addition, CDC is working to validate a highly sensitive multiplex immunoassay. This laboratory tool, which can simultaneously detect infections due to more than 35 viral, bacterial, and parasitic pathogens using a single, small blood sample, will allow make integrated surveillance for parasitic diseases as well as vaccine preventable diseases feasible and less expensive.

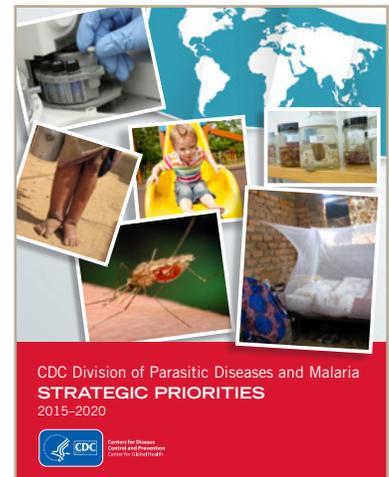


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CDC and partners developed the Transmission Assessment Survey (TAS) to assess whether infection levels of lymphatic filariasis (an NTD) in a community are below the threshold to sustain transmission. WHO adopted the TAS training as the global curriculum. CDC has also been working on development, implementation, and operational research for surveillance approaches to ensure that transmission does not recur (post-treatment surveillance), the next step towards documenting elimination of diseases as countries prepare for WHO verification.

## Looking forward

CDC continues to promote and evaluate existing interventions to ensure they are maximally effective, while also looking ahead to develop new tools for future needs to help accelerate progress towards elimination. Future near-term efforts will focus on assessing health burden in the United States from parasitic diseases and increasing awareness and capacity to prevent and control them, as well as developing and deploying new tools, including advanced molecular detection (AMD) methods, to further decrease transmission and help accelerate progress towards elimination.



**To learn more about CDC's Division of Parasitic Diseases and Malaria and its public health efforts visit [www.cdc.gov/parasites](http://www.cdc.gov/parasites).**