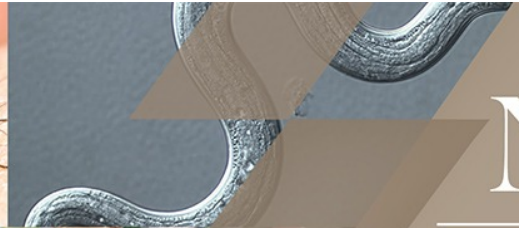

NewsBites

Division of Parasitic Diseases and Malaria
Center for Global Health

Winter 2021

Mother and child participants in the malaria vaccine launch in Kenya (Homa Bay County). Credit: WHO / Neil Thomas

2020: DPDM Year in Review

With the COVID-19 pandemic affecting every corner of the globe, 2020 was anything but ordinary. More than ever, CDC's Division of Parasitic Diseases and Malaria (DPDM) was counted upon to swiftly and smoothly adapt to the new reality forced by the pandemic. Since the emergence of the novel coronavirus, DPDM has continued its life-saving work to keep Americans and the global community safe from creepy and sometimes deadly parasites, while also lending expertise to fight the pandemic domestically and abroad.

In 2020, DPDM:

- Tested **3,531** specimens from U.S. residents and overseas government staff for parasitic diseases.
- Released lifesaving medications otherwise unavailable in the United States for treatment of **105** patients with parasitic diseases (**82** patients received treatment for severe malaria).
- Responded to more than **3,112** inquiries via its 24/7 hotline.

Concurrently, in support of CDC's agency-wide response to coronavirus, our epidemiologists screened travelers for symptoms, analyzed data, and designed studies; our laboratory scientists supported specimen collection and testing; our project officers helped coordinate vaccine distribution; our health communicators ensured

CDC's guidance is clear and accessible; and our public health advisors/analysts coordinated with partners and guided decision-making.

Last month, we launched a new Strategic Plan 2021-2025 outlining priorities towards three strategic goals to guide our work and collaborations with partners:

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)

Here is a look at some of the challenges we faced and achievements we celebrated in 2020:

Ensure prevention, diagnosis, and treatment of parasitic diseases in the United States

Striking Back against *Cyclospora*

The 2020 cyclosporiasis season was an active one, with more than 1,200 cases reported to CDC, including a large, multistate outbreak of *Cyclospora* infections linked to bagged salad mix.

To help combat *Cyclospora*, DPDM is using advanced molecular detection (AMD) methods to develop DNA fingerprinting to help distinguish among different strains of the parasite that causes cyclosporiasis. These tools help link cases to each other and to particular types of produce, which can help public health officials investigate and possibly prevent future outbreaks of *Cyclospora*.

Ensuring Access to Life-Saving Treatment

There are approximately 300 cases of severe malaria in the United States each year, most of which are acquired from travel to malaria-endemic countries. In 2020, Artesunate for Injection™—the first-line drug for treatment of severe malaria in the United States—was approved by the FDA and is now manufactured, distributed, and commercially available in the United States. DPDM continues to provide this life-saving treatment until it becomes widely accessible.

Travel restrictions due to COVID-19 decreased the demand for IV artesunate in 2020: there were 99 releases of the drug in 2020 compared to 249 in 2019. However, as international travel picks up, demand for the drug is expected to increase, too.

Also helping to improve appropriate diagnosis and treatment of malaria, in May 2020, DPDM launched a new and improved web-based training course, "Malaria 101 for the Healthcare Provider," designed to teach epidemiologists and healthcare professionals about the epidemiology, prevention, diagnosis, and treatment of malaria.

Worm Infections in the U.S.?

In 2019, in response to concerns about the presence of soil-transmitted helminths (STH) in some rural areas of the southeastern United States, DPDM began a project to investigate the presence of hookworm, an intestinal parasite that affects more than 550 million people worldwide.

DPDM awarded funds for surveillance, source remediation, and clinical care to two partner institutions: University of Alabama at Birmingham (UAB) and the University of Mississippi Medical Center (UMMC).

In 2020, despite delays caused by COVID-19 and other factors, both UAB and UMMC made progress, working with community partners to address local concerns about STH infections, promote awareness about the projects, and enhance community engagement. Depending on what the data show, future efforts will look at ways to prevent STH infections or to look for STH infections in other historically endemic areas.

Spreading the Word on Chagas Disease

CDC recently launched a new five-year cooperative agreement to increase health care provider knowledge and awareness of Chagas disease.

The approximately $400,000 (in 2020) in funding will support three awardees: Boston Medical Center, Albert Einstein College of Medicine, and Texas State University, to build upon previous efforts. With modest CDC funding over the past five years, these partners have developed new strategies, educational tools, materials, and guidelines to improve awareness and prevention of Chagas disease. Collectively, these efforts have reached more than 9,200 healthcare providers nationwide.

With support from CDC:

- Boston Medical Center collaborators plan to build on and expand from their experience with an existing Chagas disease screening and treatment program, Strong Hearts in East Boston, to expand to other parts of the country.
- Albert Einstein College of Medicine collaborators intend to establish local access to Chagas disease screening and treatment through networks in the Tri State and Delmarva areas, developing provider knowledge and skills through immigrant health education efforts.
- Texas State University collaborators plan to continue efforts in Texas with the highly successful Texas Chagas Taskforce, established under the previous cooperative agreement with CDC. Also continuing and expanding are provider education efforts to include community health worker education and support both in Texas and other parts of the United States.

CDC continues to help raise awareness and improve control of Chagas disease through continuing medical education materials and patient and provider educational information.

Reduce the global burden of malaria

Tracking the Spread of *Anopheles stephensi*

This photograph depicts an *Anopheles stephensi* mosquito larva. Credit: CDC / PHIL

Read more about the spread of the *An. stephensi* mosquito and check out our animated video on mosquitoes.

In 2020, DPDM continued tracking the troubling spread of *Anopheles stephensi*, a mosquito which has spread from southern Asia to eastern Africa. Initially detected in Dijibouti in 2012, it has since been found in neighboring Ethiopia, Sudan, and Somalia. Unlike many of its cousins, *An. stephensi* thrives in urban settings. This has made it difficult for National Malaria Control Programs to deal with this vector, since it behaves very differently from other African malaria vectors.

The simultaneous emergence of *An. stephensi* and the rise in urban malaria cases raises the possibility that the newly introduced species is responsible for increased malaria transmission. Malaria was near elimination in Djibouti before the detection of *An. stephensi*. It has since increased more than 1,000-fold. CDC and the President's Malaria Initiative (PMI) are working to learn how and where *An. stephensi* is spreading, how to control it most effectively, and strongly support the WHO's call for intensified surveillance and targeted vector control.

An Early Warning System to Detect Resistance to Antimicrobial Drugs

Technicians from Angola visit CDC for laboratory training in early 2020.

The President's Malaria Initiative-supported Antimalarial Resistance Monitoring in Africa (PARMA) Network assists PMI countries in testing samples for genetic markers associated with antimalarial drug resistance.

Despite the COVID-19 pandemic, CDC offered laboratory training on how to detect genetic markers of malaria drug resistance to visiting technicians from Angola in 2020, and provided virtual molecular courses for Tanzania. DPDM also provided post-PARMA training and virtual technical assistance to Burkina Faso, Democratic Republic of Congo, Ethiopia, Kenya, Mali, Rwanda, Uganda, Mozambique, and Tanzania. The trainings for laboratorians provided unexpected benefits outside of malaria testing; in 2020, lab personnel used the training received through PARMA to accelerate their efforts in COVID-19 testing.

In 2021, the team plans to continue analyzing samples even if trainees cannot come to CDC. There are preparations to receive samples from Madagascar, Nigeria, Guinea, and Tanzania.

Happy 15th Anniversary, PMI!

The year 2020 marked PMI's 15th anniversary. Led by the U.S. Agency for International Development (USAID) and co-implemented with CDC, PMI is one of the U.S. government's greatest success stories. Together with its partners, PMI has helped save more than seven million lives and prevented more than a billion cases of malaria since 2000. PMI has worked with partner countries to build capacity and systems to combat malaria, which also equip them to better respond to other public health

threats. In 2020, PMI's service delivery platform was essential to the COVID-19 response in partner countries.

Reduce the global burden of priority Neglected Tropical Diseases (NTD)s

Eliminating a Debilitating Disease in American Samoa

DPDM staff conduct a virtual training for fingerstick blood collection for colleagues with the American Samoa Department of Health in September 2020.

Lymphatic filariasis (LF) continues to pose a health risk in the U.S. territory of American Samoa. Although COVID-19 impacted health systems globally, DPDM's experts adapted. In addition to providing virtual trainings on implementing impact assessments, DPDM also supported the American Samoa Department of Health (ASDOH) in carrying out morbidity management and disability prevention activities.

After successful first and second rounds of mass drug administration (MDA)—launched in 2018 and 2019—coverage surveys showed that drug coverage of the WHO-recommended triple drug therapy of ivermectin, DEC, and albendazole surpassed targets. DPDM will partner with ASDOH and the Pacific Island Health Officers' Association on a third round of MDA in early 2021. Thanks to this work, American Samoa remains on track to eliminate LF by 2025, despite the hurdles presented by the pandemic.

Building Capacity to Monitor for Multiple Diseases with One Tool

DPDM developed and validated a multiplex immunoassay laboratory tool that can detect antibodies to more than 30 different viral, bacterial, and parasitic disease agents from just a single, small blood sample. This approach provides a more cost-effective way to obtain critical public health information, as most surveillance costs are related to sample collection. Since late 2017, DPDM has used the multiplex immunoassay to conduct integrated serosurveillance for infectious diseases in large-scale pilots in Brazil, Mexico, Paraguay, Thailand, and the United States.

After launching efforts in Nigeria to test over 200,000 samples collected as part of a national HIV program impact survey, DPDM started to validate SARS-CoV-2 antigens on the multiplex serological platform for integrated surveillance.

In 2020, technical staff from DPDM were able to provide remote support to Nigeria, including creative solutions to get shipments to the National Reference Laboratory (NRL) in Nigeria in the absence of commercial flights. This allowed the NRL to complete testing for more than 40,000 samples. The results are being used to inform immunization and malaria control activities.

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