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SUMMARY
2021 VIRTUAL PROGRAM REVIEW

HISPANIOLA INITIATIVE

THE DOMINICAN REPUBLIC AND HAITI

MARCH 3-4, 2022

THE CARTER CENTER
ATLANTA, GA

AUGUST 2022

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And to many others, our sincere gratitude.

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ACRONYMS

CDC	Centers for Disease Control and Prevention
CDSM	Chronic Disease Self-Management
CE	Community Engagement
CECOVEZ	Centro de Prevención y Control de Enfermedades Transmitidas por Vectores y Zoonosis
CFA	Circulating Filarial Antigen
CHAI	Clinton Health Access Initiative
CHC	Community Health Council
CHW	Community Health Worker
CI	Confidence Interval
COR-NTD	Coalition for Operational Research on Neglected Tropical Diseases
COVID-19	2019 novel Coronavirus Disease
DA	Diethylcarbamazine and Albendazole
DEC	Diethylcarbamazine
DTI-R	Diagnosis-Treatment-Investigation and Response
EU	Evaluation Unit
FFI	Freedom From Infection
FTS	Filariasis Test Strip
GLIDE	Global Institute for Disease Elimination
HELP	Human Engagement Learning Platform
HSC	Hôpital Sainte Croix
IDA	Ivermectin, Diethylcarbamazine, and Albendazole
IRS	Indoor Residual Spraying
ITFDE	International Task Force for Disease Eradication
IU	Implementation Unit
LF	Lymphatic Filariasis
LSHTM	London School of Hygiene and Tropical Medicine
MDA	Mass Drug Administration
MMDP	Morbidity Management and Disability Prevention
MSP	Ministry of Public Health (The Dominican Republic)
MSPP	Ministry of Public Health and Population (Haiti)
NPELF	National Program to Eliminate Lymphatic Filariasis (Haiti)
NTD	Neglected Tropical Disease
PAHO	Pan American Health Organization
PEEL	Plan, Execute and Engage to Learn model
PELF	Program to Eliminate Lymphatic Filariasis (The Dominican Republic)
PNCM	National Malaria Control Program (Haiti)
PTS	Post-Treatment Surveillance

RDT	Rapid Diagnostic Test
RPRG	Regional Program Review Group
SARS-CoV-2	Severe Acute Respiratory Syndrome Coronavirus 2
SMS	Short-Message Service
SSe	Sensitivity of Surveillance System Estimate
TAS	Transmission Assessment Survey
TCC	The Carter Center
UNDP	United Nations Development Program
UNICEF	United Nations Children's Emergency Fund
USAID	United States Agency for International Development
WHO	World Health Organization
WISH	World Innovation Summit for Health
ZLDSI	Zanmi Lasante Depression Symptom Inventory

EXECUTIVE SUMMARY

The eighth annual Carter Center (TCC) Hispaniola Initiative Program Review meeting convened virtually March 3-4, 2022. The purpose of the meeting was to review progress in elimination of malaria and lymphatic filariasis (LF) in Haiti and the Dominican Republic in 2021 and to make recommendations for activities in 2022.

Attending the meeting were representatives of the ministries of health of Haiti and the Dominican Republic and TCC staff. Partners and donors in attendance included representatives from the U.S. Centers for Disease Control and Prevention (CDC), Clinton Health Access Initiative (CHAI), Emory University, the Leona M. and Harry B. Helmsley Charitable Trust, IMA World Health, International Public Health Advisors, London School of Hygiene and Tropical Medicine (LSHTM), Pan American Health Organization (PAHO), PATH, RTI International, United States Agency for International Development (USAID), University of Florida, University of Toronto, and University of Washington.

TCC's Hispaniola Initiative works with the ministries of health in Haiti and the Dominican Republic to eliminate malaria and LF from the countries' shared island, Hispaniola. It is the only island in the Caribbean that has not yet eliminated malaria. It also accounts for around 95% of the LF burden in the Western Hemisphere. In 2006, the International Task Force for Disease Eradication (ITFDE) concluded that elimination of malaria and LF from Hispaniola was "technically feasible, medically desirable, and would be economically beneficial" to both countries [1] TCC launched an 18-month pilot project in 2008 to foster binational cooperation by establishing a cross-border initiative in the Ouanaminthe-Dajabon border region and facilitating the creation of binational plans and budgets for malaria and LF elimination by 2020. In the years that followed, TCC supported regular binational meetings to promote coordination between the Haitian and Dominican ministries of health. In 2014, TCC expanded its support for malaria and LF elimination in Hispaniola, including: i) continued support for binational cooperation, ii) technical assistance to re-orient the programs from control to elimination, and iii) updating the funding needs to achieve 2020 elimination goals and help the countries to secure the necessary financial support.

The meeting was chaired by Dr. Gregory Noland, Director of TCC's River Blindness, Lymphatic Filariasis, Schistosomiasis, and Malaria programs. The meeting opened with welcoming remarks from TCC's Vice President of Health Programs, Dr. Kashef Ijaz, and Chief Executive Officer, Ms. Paige Alexander. The meeting also opened with a goodwill message from Dr. Tedros Adhanom Ghebreyesus, Director General of the World Health Organization.

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[1] World Health Organization (2007). "Meeting of the International Task Force for Disease Eradication - 12 May 2006." *Weekly Epidemiological Record* **82**: 25-32.

The COVID-19 pandemic continued through 2021. Since first being detected in Hispaniola in early March 2020, a total of 606,334 cases (575,949 in the Dominican Republic and 30,385 in Haiti) and 5,194 deaths (4,371 in the Dominican Republic and 823 in Haiti) due to SARS-CoV-2 virus were reported as of March 7, 2022. Programmatic activities in Haiti were also disrupted by the continuation of political and social instability that began in late 2018, including the assassination of President Jovenel Moïse on July 7, 2021. As a result, many businesses, schools, and government agencies across the country were closed or not fully operational throughout 2021.

In 2021, a total of 10,951 cases of malaria were reported in Hispaniola (10,661 in Haiti and 290 in the Dominican Republic). This represents a 51.7% decrease in cases since 2020 (22,685 cases) and an 87.4% decrease in cases since 2010, when 86,635 cases were reported island-wide following the earthquake in January of that year. Eight malaria deaths were reported in 2021 (7 in Haiti and 1 in the Dominican Republic), a 33.3% reduction compared to 12 deaths in 2020.

LF remained endemic in 19 districts (*communes*) in Haiti (14% of districts nationwide). MDA did not take place in any district in 2021 due to a combination of the COVID-19 pandemic, political instability, insecurity, and financial constraints. Of 19 transmission assessment surveys (TAS) scheduled for 2021, eight were conducted, but only one met the target sample size: TAS-3 in Chansolme, North-West department. The area passed TAS-3, meaning that 3 districts in Haiti have completed the series of three TAS recommended by World Health Organization (WHO). In the Dominican Republic, all three formerly endemic foci are under post-treatment surveillance (PTS). In 2021, the East region passed TAS-2, while no individuals were positive for LF circulating filarial antigen (CFA) in PTS surveys conducted in the La Ciénaga focus.

RECOMMENDATIONS FOR 2022

1. Publish on the Haitian Ministry of Public Health and Population (MSPP) website the community health council (CHC) Implementation Manual and Monitoring and Evaluation Handbook developed to assist malaria elimination efforts in Haiti.
2. Urge Haitian MSPP to finalize and publish the Revised National Strategic Plan for Malaria Elimination 2020-2025.
3. In Grand'Anse Department, progressively transition support for CHCs to MSPP until full transition in 2023. In Sud Department, establish and train CHCs in high-malaria burden communes.
4. Resume support for binational collaboration to interrupt malaria transmission in the area of and around the Ouanaminthe, Haiti - Dajabon, Dominican Republic cross-border area.
5. Urge the Dominican Ministry of Public Health (MSP) to finalize and release an updated national strategic plan for malaria.
6. Secure resources to establish a molecular surveillance laboratory at MSP.
7. In collaboration with LSHTM, apply the Freedom From Infection (FFI) framework to evaluate the sensitivity of the existing malaria surveillance systems in the Dominican Republic to detect malaria infections.
8. The geographically shifting series of malaria outbreaks in the Dominican Republic suggests that more aggressive approaches should be considered (e.g., expanded community-based testing and treatment, indoor residual spraying (IRS), and possible mass drug administration (MDA)).
9. Complete ethnographic research in outbreak-affected areas of Santo Domingo and publish results. Refine community engagement (CE) strategies for interrupting malaria transmission based on results.
10. Conduct MDA for LF in Gressier and Léogâne-plains sub-district, Haiti using triple-drug ivermectin-DEC-albendazole (IDA) therapy.
11. Conduct LF MDA coverage surveys in Gressier and Léogâne-plains sub-district, Haiti no later than six months after the IDA campaign.
12. Continue collaboration with the Human Engagement Learning Platform (HELP) group at Emory University to improve MDA coverage for LF, including work with systematic non-participants.
13. Publish results from the 2021 TCC-led integrated malaria-LF MDA coverage and prevalence surveys in Léogâne and Gressier, Haiti.
14. Initiate post-treatment surveillance for LF in the Léogâne-mountains sub-district in Haiti.
15. Support scale-up of LF morbidity management and disability prevention (MMDP) in Haiti by organizing workshops to train clinical staff and establish designated referral centers for LF care in the communes of Arcahaie, Gonaïves, Milot, and Port-de-Paix communes, Haiti.
16. Assist TCC Mental Health Program to publish results of the LF-mental health chronic disease self-management (CDSM) pilot project in Haiti.
17. Complete unfinished LF TAS in Haiti from 2021, along with eligible pre-TAS and TAS in 2022.

18. Prepare a manuscript for peer-review publication of TCC-led integrated malaria-LF TAS results in Haiti.
19. Conduct the nationwide LF remapping survey in the Dominican Republic in 2022 (with integrated malaria testing).
20. Support scale-up of LF MMDP in the Dominican Republic by organizing workshops to train clinical staff to integrate MMDP into primary care services nationwide.
21. Collate historical data to draft the Dominican Republic LF elimination dossier.

MALARIA ELIMINATION IN HAITI

National Malaria Control Program Report - Dr. Marc-Aurèle Telfort (MSPP)

The Haitian National Malaria Control Program (French: *Program National de la Contrôle de la Malaria*, PNCM) coordinates malaria elimination activities for MSPP. The goals of the revised National Strategic Plan for the Elimination of Malaria in Haiti (2020-2025) are to eliminate malaria by 2025, including zero autochthonous malaria transmission and zero malaria deaths by 2025. In 2021, a total of 10,661 cases of malaria and 7 deaths were reported by MSPP (Annex 1). This represents a 51.2% decrease compared to the previous year, 2020, when 21,856 cases were reported. There was a slight (4.4%) decrease in number of people tested from 2020 (245,202) to 2021 (234,324) indicating that the decline in cases is not due to a decrease in testing. Reasons for the large decrease are not clear. Cases have declined 87.3% in Haiti since 2010, when 84,153 cases were reported following the earthquake in January of that year. Geographically, Grand'Anse (48.45%), Sud (25.25%), and Sud-Est (11.91%) departments accounted for 85.61% of cases nationally (Annex 2). All other departments individually accounted for no more than 5.1% of cases nationally. Between 2019 and 2021, there was a decrease (from 55 to 49) in the number of 'Strata 4' communes (those reporting more than 50 cases annually in at least one of the past three years), and an increase (from 18 to 23) in the number of 'Strata 1' communes (those reporting zero cases of malaria in the previous three years).

Haiti Malaria Community Engagement & COVID-19: "We came close to madness because of misery": Community perspectives and experiences of the COVID-19 pandemic in southwest Haiti – Dr. Kevin Bardosh (University of Washington)

This presentation explored community experiences, responses, and attitudes towards the COVID-19 pandemic in Grand'Anse Department in southwest Haiti. It drew on longitudinal, in-depth, qualitative interviews conducted with 30 participants at two time periods: May 2020 and again in Oct-Dec 2021. Participants were members of existing community-based health groups working on malaria control and prevention.

We found that despite the lack of access to testing, most people believed they had caught COVID-19 in 2020 and did not know anyone who had died from the virus. The low fatality rate was ascribed to the strength of people's immune systems, widespread use of natural prophylactic teas, the weather (particularly heat), and spiritual protections. We found strong negative feelings about the pandemic restriction measures, especially the 2020 lockdown, and a dominant perception that restrictions were largely ineffective, not well planned, reflected political interests, and were socially harmful. Participants reported many negative long-term impacts of pandemic restrictions including reductions in food security, income, education, health and psychosocial wellbeing as well as increases in debt. Community masking was generally believed to be low and a symbol of wealth and status, while COVID-19 vaccines were viewed as unnecessary given the perceived high

prior infection rate and distrust of the government's COVID-19 response. Stigma associated with testing was widespread in 2020, although some people reported that it continued into 2021. These findings have important relevance for pandemic response policies in Haiti and other low-income countries.

MALARIA ELIMINATION IN THE DOMINICAN REPUBLIC

Malaria Elimination in the Dominican Republic - Dr. Keyla Ureña (MSP).

The Dominican MSP reported a total of 290 cases of malaria and 1 death in 2021 (Annex 1). This represents a 65.0% decrease from the 829 cases reported in 2020 and is the lowest number of cases reported since 1975 when 159 cases were reported. Active case detection remains an important tool as the country strives towards elimination, with 43.8% (127) of 2021 cases detected by this method. Geographically, the four main foci of San Juan (49.7%), Los Tres Brazos (at the juncture of the *Distrito Nacional* and the municipalities of Santo Domingo East and Santo Domingo North, 31.7%), La Ciénaga (in Santo Domingo West municipality, 3.8%), and Azua (3.4%) accounted for 88.6% of all cases nationally in 2021. Incidence was <1 case per 1000 persons in all but the district of San Juan, which had an incidence of 1.1/1000 persons in 2021 (Annex 3). The reported number of persons tested for malaria marginally increased (1.6%) from 59,544 in 2020 to 60,519 in 2021, indicating that the decrease in cases is not due to a decrease in testing. There may have been fewer cases due to COVID-19 pandemic lockdown restrictions that kept people in their homes at night and possibly reduced exposure to mosquito bites. The number of imported cases increased from 3 (0.4% of the national total) in 2020 to 7 (2.4% of the national total) in 2021. Areas of origin include: Haiti (2 *Plasmodium falciparum*), Colombia (1 *P. vivax*), Guyana (1 *P. vivax*), Nigeria (1 *P. falciparum*), and unspecified Africa region (1 *P. falciparum* and 1 *P. vivax*). The Dominican Republic was included in the WHO E-2025 initiative as one of the countries that will receive technical guidance and specialized support in its last miles towards elimination.

Regional Malaria Elimination – Dr. Roberto Montoya (PAHO)

Paralleling the global trend, progress on the achievement of regional targets for reductions in malaria burden has stalled since 2015. Between 2015 and 2020, malaria cases in the Americas increased by 32%, while malaria deaths decreased by 31%. In 2020, the region reported a total of approximately 602,500 confirmed cases of malaria and 108 deaths. Around 76% of reported cases are caused by *Plasmodium vivax* and 24% by *Plasmodium falciparum*. Socioeconomic determinants have notably contributed to these trends, particularly the migration of people due to economic activities such as gold mining and agriculture, which occur alongside the context of weak health services for these populations. On the other hand, during this period, additional countries in the region effectively stopped local malaria transmission. Paraguay (2018), Argentina (2019), and El Salvador (2021) were certified as malaria free and in 2021 Belize completed three years without local transmission.

The Dominican Republic and Haiti are among the countries that reported decreases in cases in 2021. The situation of the two countries that share the island of Hispaniola is one of the most favorable in the region to eliminate malaria. Factors in favor of elimination include geographical isolation (island), the focalization of the transmission, and the

exclusive transmission by *P. falciparum*. In 2021, the Dominican Republic reported the lowest number of cases since 1975, a key opportunity to interrupt transmission.

Through the Malaria Elimination Action Plan 2021-2025 PAHO is promoting the diagnosis-treatment-investigation and response (DTI-R) strategy, which involves intensified action to improve the detection and timely treatment of cases. Other key elements of change are stratification based on receptivity and risk of importation, as well as efforts aimed at identifying the malaria foci and organizing the malaria operation at the local level.

Malaria Ethnographic Research in the Dominican Republic – Dr. Hunter Keys (TCC)

Effective community engagement with malaria-affected communities in Santo Domingo is essential for controlling outbreaks and bringing the country closer to elimination. To better understand barriers and facilitators to effective community engagement, TCC and Centro de Prevención y Control de Enfermedades Transmitidas por Vectores y Zoonosis (CECOVEZ) have been undertaking a year-long ethnographic study in two malaria transmission foci: Los Tres Brazos and La Ciénaga. A trained Dominican ethnographer has been collecting interviews and observational data with 36 key informants, including former malaria patients, clinicians, community leaders, and community health workers (CHWs). Thus far, the work has uncovered specific conditions or factors for positive collaboration. First, early diagnosis and treatment in the community generates a more positive perception of the malaria program and leads others in the community to engage more proactively with field staff, such as by accepting at-home blood tests or alerting field staff of sick neighbors who need testing. This, in turn, leads to more prompt diagnosis and treatment, which contributes to increased job satisfaction and motivation among CHWs who see their work less as purely about controlling malaria and more as a means to show solidarity with sick neighbors. The study will conclude in spring 2022 and provide recommendations to strengthen these elements that appear essential for community engagement.

Freedom From Infection: A Framework to Support Evidence-Based Decision-Making for Malaria Elimination – Dr. Gillian Stresman (LSHTM)

Proving that a disease has been eliminated is not practical using conventional statistical tools. Unless every person in the population is sampled using the perfect diagnostic test, one can never be sure that the disease of interest has been eliminated from the target population. However, it is possible to measure the probability that infections would be detected if they exist, given the current surveillance system in place. We have adapted the FFI framework, developed for the context of veterinary epidemiology, with the aim to determine if and how these tools can be suitably adapted to the context of human health, using malaria as a case study. This presentation started with an overview of the FFI

framework, including how to estimate the sensitivity of the malaria surveillance system (SSe), and the corresponding probability of elimination using data from a case study in Indonesia. Next, the presentation provided an overview of the current project in collaboration with TCC and the Dominican Republic's malaria program, in which we aim to apply the FFI framework to determine how it can best support the transition to achieving and confirming malaria elimination. Through this work, we will determine the impact of a high degree of population movement on SSe, the added sensitivity gained where CHWs operate, and validate the FFI framework for use in the Dominican Republic. Data collection is planned for spring 2022, with results expected by August of the same year.

LYMPHATIC FILARIASIS ELIMINATION IN HAITI

National LF Elimination Program Report - Dr. Marc-Aurèle Telfort (MSPP)

The National Program to Eliminate Lymphatic Filariasis (NPELF) coordinates LF elimination activities for MSPP. By the end of 2021, 121 (86%) of the 140 districts (*communes*) nationwide had stopped MDA by successfully completing TAS-1 and were under PTS (Annexes 4 and 5). Of these, 3 communes have also successfully passed TAS-2 and TAS-3. No MDA campaigns took place in 2021 in the 19 districts still requiring MDA. Planned MDA campaigns in 2021 were not conducted due to a combination of the COVID-19 pandemic, political instability, security concerns, and financial constraints. However, an LF MDA coverage and prevalence survey was conducted in Léogâne and Gressier (see following section). Initially, 19 TAS were planned for 2021. However, only 8 were conducted: one TAS-1 in the North department, one TAS-2 in the West department, three TAS-3 in the North department, two TAS-3 in the North-East department, and one TAS-3 in the North-West department (Annex 6). The TAS-3 in Chansolme in the North-West department was the only TAS to meet the targeted sample size, and it passed TAS-3; next steps for the others remains undecided. Among all 8 conducted TAS, 4,669 children ages 6-7 years old were tested for CFA by filariasis test strip (FTS), 17 (0.36%) were FTS-positive, including 14 CFA-positive children detected in TAS-3 surveys across Plaisance (5), Port Margot (1), Ouanaminthe (2), Trou du Nord (1), and Chansolme (5) communes. The remaining planned TAS (5 TAS-2 and 7 TAS-3) were not initiated in 2021 for the same reasons the MDA campaigns were not conducted.

Leogane-Gressier LF Coverage and Prevalence Survey – Dr. Karen Hamre (TCC)

This presentation reported findings from the LF MDA campaign coverage and prevalence survey that was conducted in Léogâne and Gressier districts from June to July 2021 and December 2021 to January 2022, following the most recent LF MDA in December 2020. Program-reported epidemiological coverage was 79.5% and 77%, in Léogâne and Gressier, respectively. Weighted coverage estimates from the survey were 58.9% for Léogâne and 53.3% for Gressier, which is more than 20% lower than program-reported estimates and less than the WHO minimum effective threshold of 65%. Coverage tended to be higher in the mountains versus the plains in both districts (64.7% vs. 57.6% in Léogâne, and 59.3% vs. 45.1% in Gressier, respectively). Common reasons cited for not taking medicines included: unaware of MDA (27.8%) and fear of side effects (11.4%). When the analysis was restricted to those who received the pills, weighted coverage estimates increased to 79.5% for Léogâne and 78.9% for Gressier. These results suggest that strictly fixed post distribution campaigns like the one conducted in December 2020 may not be sufficient to reach the entire targeted population.

All participating adults were also screened using the Zanmi Lasante Depression Symptom Inventory (ZLDSI). In Léogâne and Gressier, 4,187 adults were screened and 466 were referred to local health facilities with Mental Health specialists trained in WHO's mental

health gap action program (mhGAP). Overall, the weighted estimate of depressive illness among the general population was 5.5%.

Additionally, in each household, 2 randomly sampled members were selected for blood sample collection and testing for CFA by FTS and malaria infection by rapid diagnostic test (RDT). Overall, 6 (0.2%) of 2,842 participants with valid results tested positive for malaria by RDT; no clustering of cases was detected. CFA was detected in 63 (1.8%) of 3,560 participants with valid results. Weighted CFA prevalence estimates for Léogâne-overall, -plains, and -mountains were: 1.7% (95% CI: 1.1–2.6), 2.0% (1.3–3.1), and 0.4% (0.1–1.5), respectively. Similarly, for Gressier: 1.4% (0.8–2.5), 2.2% (1.2–4.1), and 0.8% (0.3–2.1), respectively. In each district, the mountains strata had lower estimates than the plains. Léogâne-mountains was the only stratum with an upper confidence limit beneath the WHO stop-MDA threshold of 2% CFA. Three individuals living in the same communal section, ages 22, 26, and 68, tested CFA-positive in this sub-district; none had circulating microfilariae detected by microscopy from night blood samples. These results support the interruption of LF transmission in the sub-district. In January 2022, PAHO's Regional Program Review Group (RPRG) provisionally approved the program to stop-MDA in Léogâne-mountains and to start PTS, meaning an estimated 36,892 persons would no longer require MDA.

Community Engagement for LF Elimination – Dr. Jim Lavery (Emory University)

The HELP team from Emory University provided an update on their work to support TCC and MSPP in the ongoing refinement of LF MDA strategies in Haiti, with a specific focus on Léogâne and Gressier. Preliminary findings from HELP's Brokered Design knowledge co-production strategy were shared, in which individuals who have persistently not participated in LF MDA were asked why they don't participate and what would make them more likely to participate. The presentation also included a novel combination of the co-production interview results with LF MDA coverage mapping to illustrate how context-specific understanding of non-participation in LF MDA can be improved through novel mapping collaborations. The presentation also described a new organizational learning and prioritization tool to support MDA planning and operations using insights from the co-production strategy and mapping. The tool is being developed by the HELP team in collaboration with TCC and MSPP. The presentation also introduced the key elements of the Plan, Execute, and Engage to Learn (PEEL) model of integrated MDA management, which the HELP team is developing and testing for the upcoming LF MDA in Léogâne and Gressier in collaboration with TCC and MSPP, with funding from the Bill & Melinda Gates Foundation.

Haiti LF IDA Program Implementation: Planning for Mass Drug Administration for Lymphatic Filariasis using a Triple-Drug Regimen of Ivermectin, Diethylcarbamazine, and Albendazole (IDA) in Léogâne and Gressier, Haiti – Dr. Luccène Désir (TCC)

This presentation described planning for the implementation of LF MDA using a triple drug regimen of IDA in Léogâne and Gressier in 2022. IDA has been demonstrated to be more effective in clearing microfilaremia than diethylcarbamazine and albendazole (DA) alone. MDA has been conducted in Léogâne since 2000 and since 2008 in Gressier. Despite multiple rounds with reported effective coverage of at least 65%, Léogâne and Gressier have not met the criteria for stopping MDA throughout the entire districts. The WHO recommends IDA in certain settings including in implementation units that have not met the appropriate epidemiological thresholds despite meeting drug coverage targets.

In 2021, the national LF program and its partners held workshops to review key aspects of MDA campaigns, including: advocacy, planning, & social mobilization; pharmacovigilance/adverse even monitoring; data monitoring and evaluation; and dosing and distribution strategies. Key recommendations from the workshops were incorporated into the implementation plan, such as clear communication with all stakeholders in the community to get them on-board and to work with potential non-compliers to understand and address their concerns; educating the population on the expected side effects and how those will be managed; using mixed distribution strategies (e.g., door-to-door, school-based, and fixed-post); and modifying the number of days and distribution hours to improve coverage. Updates to the communication manual, training tools, and data collection instruments are underway. The program maintains awareness of the many potential challenges (primarily security issues) that must be considered prior to conducting field activities.

Haiti LF Mental Health Project: Addressing the Mental Health of Persons Living with Lymphatic Filariasis in Léogâne, Haiti: Effectiveness of a Chronic Disease Self-Management Program – Ms. Sarah (Sadie) Bazur-Leidy (TCC)

TCC's Mental Health Program and Hispaniola Initiative have collaborated on a pilot study in Haiti to assess the effectiveness of a CDSM intervention on mental health outcomes among persons living with LF. A step-wedged design was used where Hope Clubs, or social support clubs, were randomized into two arms. Arm 1 received the intervention first, followed by Arm 2. Depression scores, measured at 3 time points (baseline, midpoint, endpoint) using ZLDSI, decreased similarly in both arms over time, indicating an improvement in both intervention (Arm 1) and wait-listed control (Arm 2) groups. These findings suggest a diffusion of the intervention effect to all study participants or an improvement in depressive scores not related to the study.

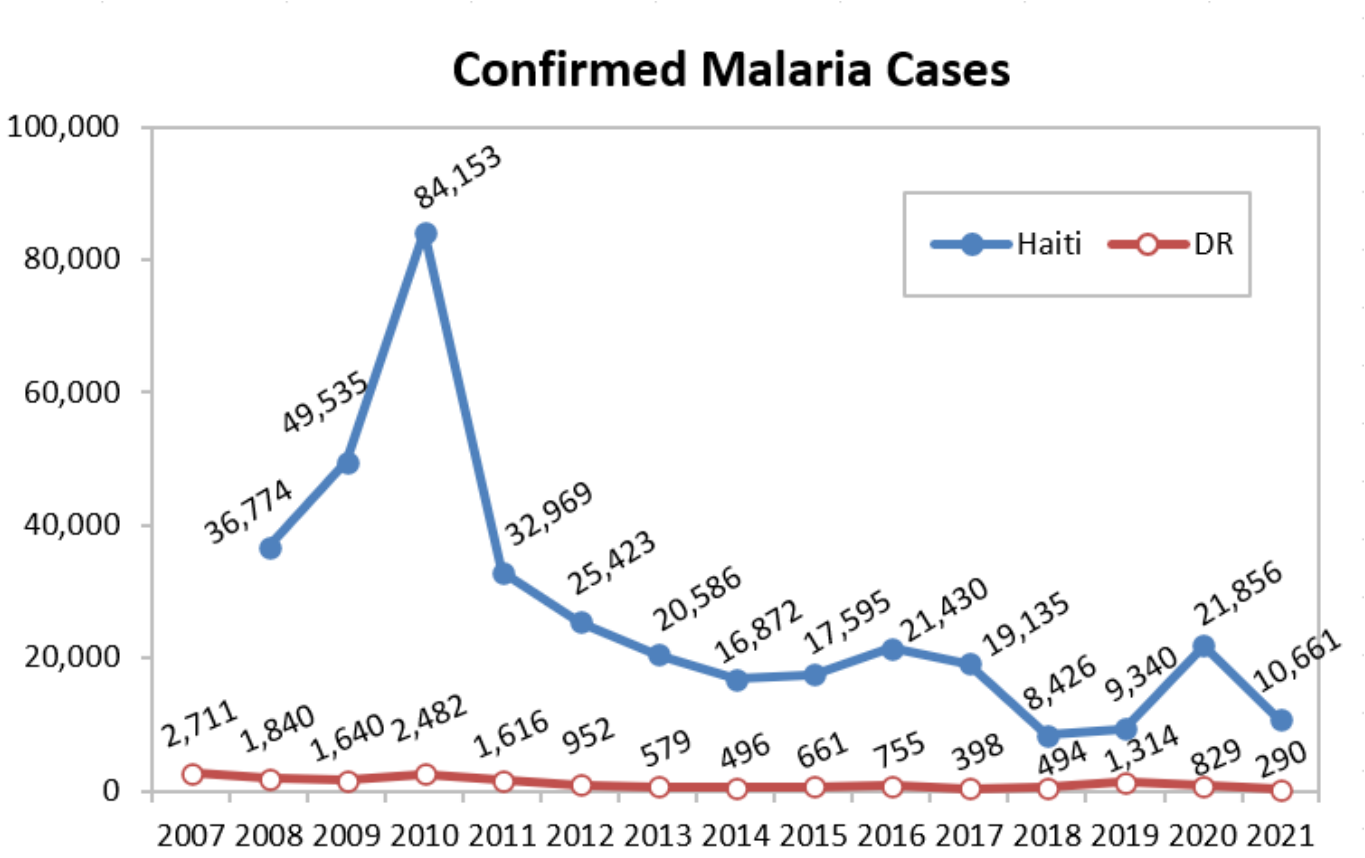
Participants had a positive impression of the intervention and its usefulness, and a trend toward improved mental health outcomes was noted. Overall, we observed that the CDSM curriculum is feasible in the Hope Club setting. Challenges included the ongoing COVID-19 pandemic, natural disasters, and significant political and social instability and uncertainty. Lessons learned from this pilot will inform future research questions and programmatic priorities at the intersection of mental health and neglected tropical diseases.

LYMPHATIC FILARIASIS ELIMINATION IN THE DOMINICAN REPUBLIC

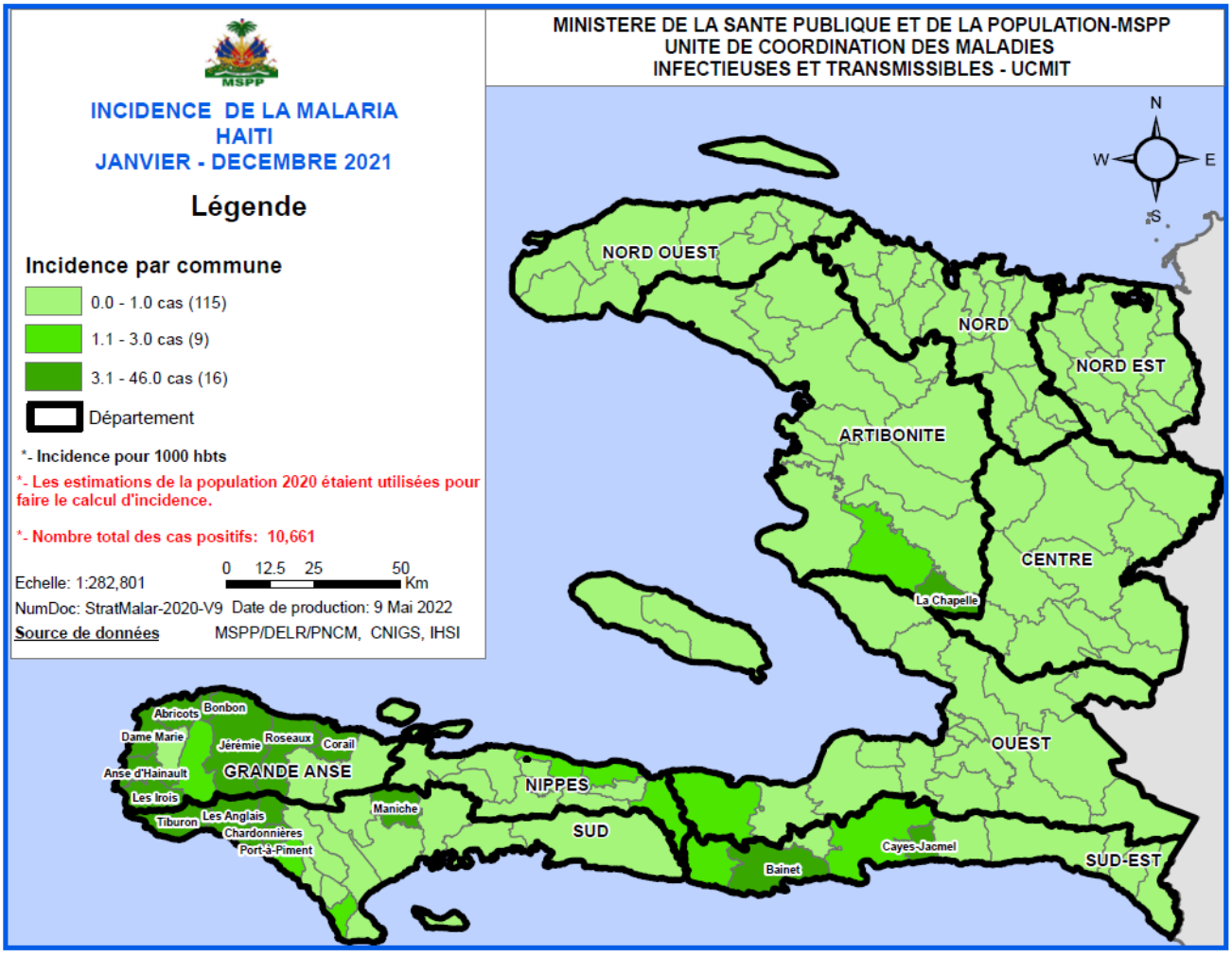
National Program to Eliminate Lymphatic Filariasis Report - Dr. Manuel Gonzalez (MSP)

In 1998, the MSP created the Program to Eliminate Lymphatic Filariasis (PELF) with the goal of eliminating LF transmission by 2020. Baseline mapping revealed that transmission was limited to 19 municipalities (12% of the national total) clustered into three geographic foci: Southwest (10 districts) and East (8)—two vast agricultural regions—and La Ciénaga (1), a small urban focus in the national district of Santo Domingo (distinct from La Ciénaga of Santo Domingo West, a current malaria transmission focus) (Annex 7). By 2018, MDA had stopped in all foci (Annex 8). PTS surveys conducted in the Southwest (2009, 2012, 2018 and 2020) and in La Ciénaga (2011, 2014, and 2018) indicate that transmission is below hypothesized sustainable levels and that MDA remains unnecessary. Surveys scheduled for 2020 in the East (TAS-2) and La Ciénaga (PTS) foci were delayed until 2021 by COVID-19 pandemic. In each survey, children 6-7 years old were enrolled according to TAS target sample sizes along with an equivalent number of persons 15 years or older. Of 1752 total individuals tested in the East focus, two participants (a 7-year old child and a 32-year old female) were positive for CFA by FTS (Annex 9). Compared to a critical cut-off of 11 CFA positive 6–7-year-old children, the evaluation unit (EU) passed TAS-2. No one tested positive for CFA in La Ciénaga. The national program also launched in the province of Barahona the first support group for individuals with LF morbidity in the country. A nationwide remapping survey to confirm the absence of LF transmission across the rest of the country was postponed to 2022.

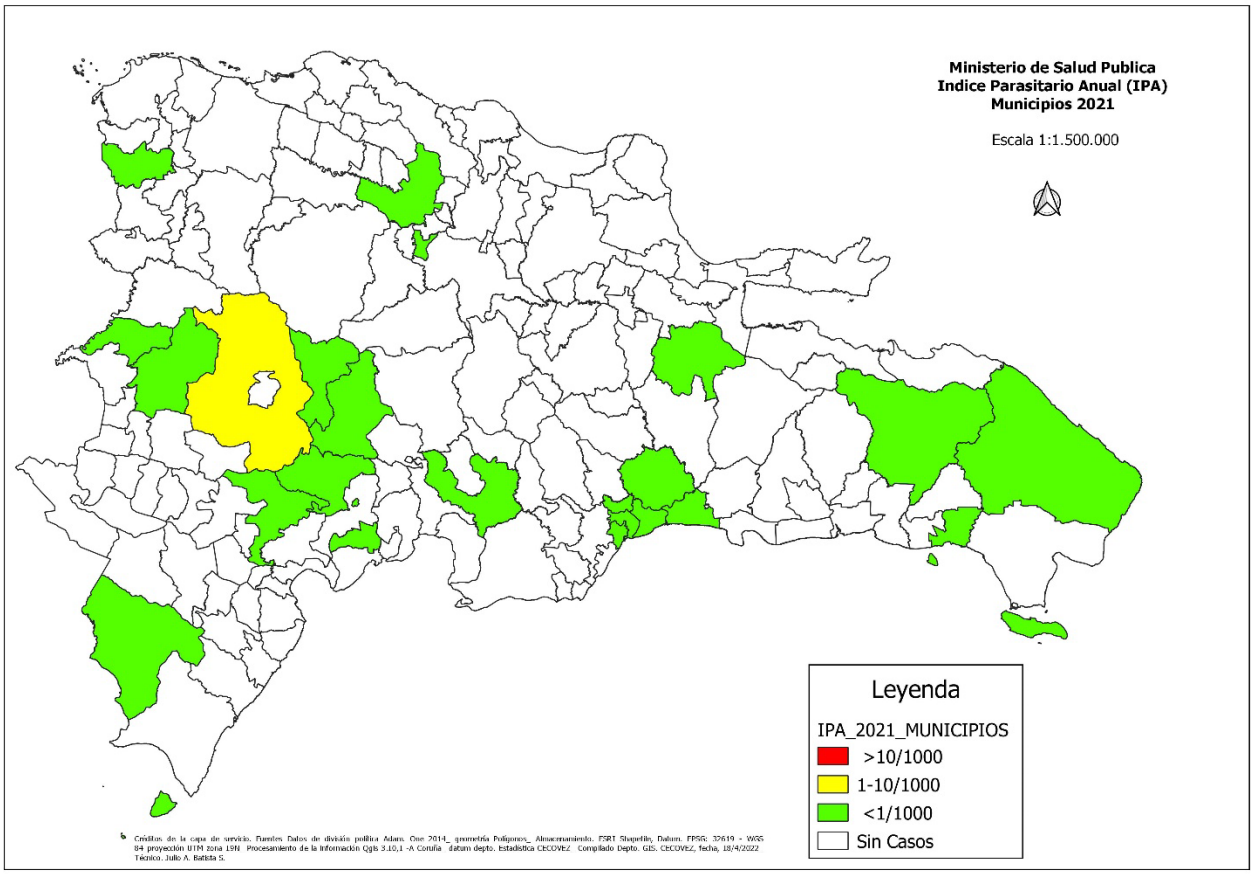
ANNEX 1. Number of Confirmed Malaria Cases in Haiti and the Dominican Republic, by year (2007-2021).



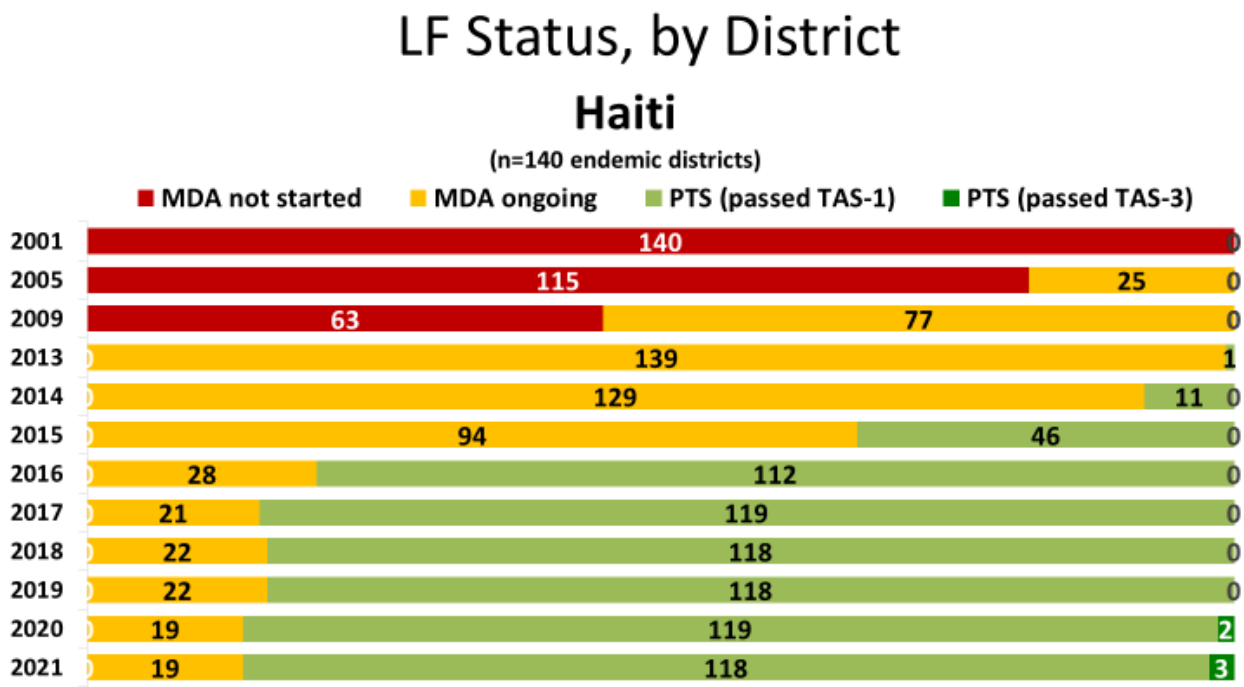
ANNEX 2. Annual malaria incidence (cases per 1000 persons), by district, Haiti, 2021.



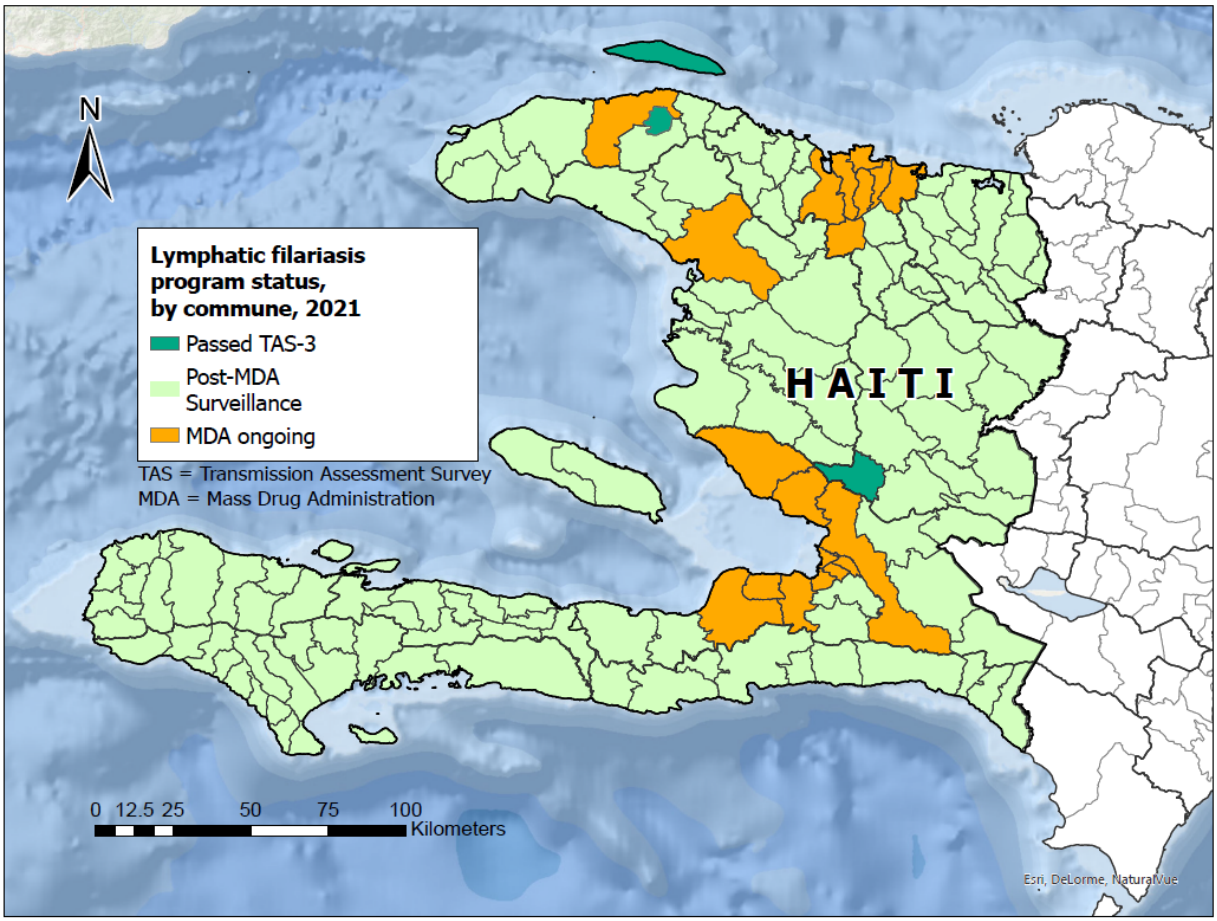
ANNEX 3. Annual malaria incidence (cases per 1000 persons), by district, the Dominican Republic, 2021.



ANNEX 4. Lymphatic filariasis elimination program status over time, by district, Haiti.



ANNEX 5. Lymphatic filariasis elimination status, by district, Haiti, December 2021.

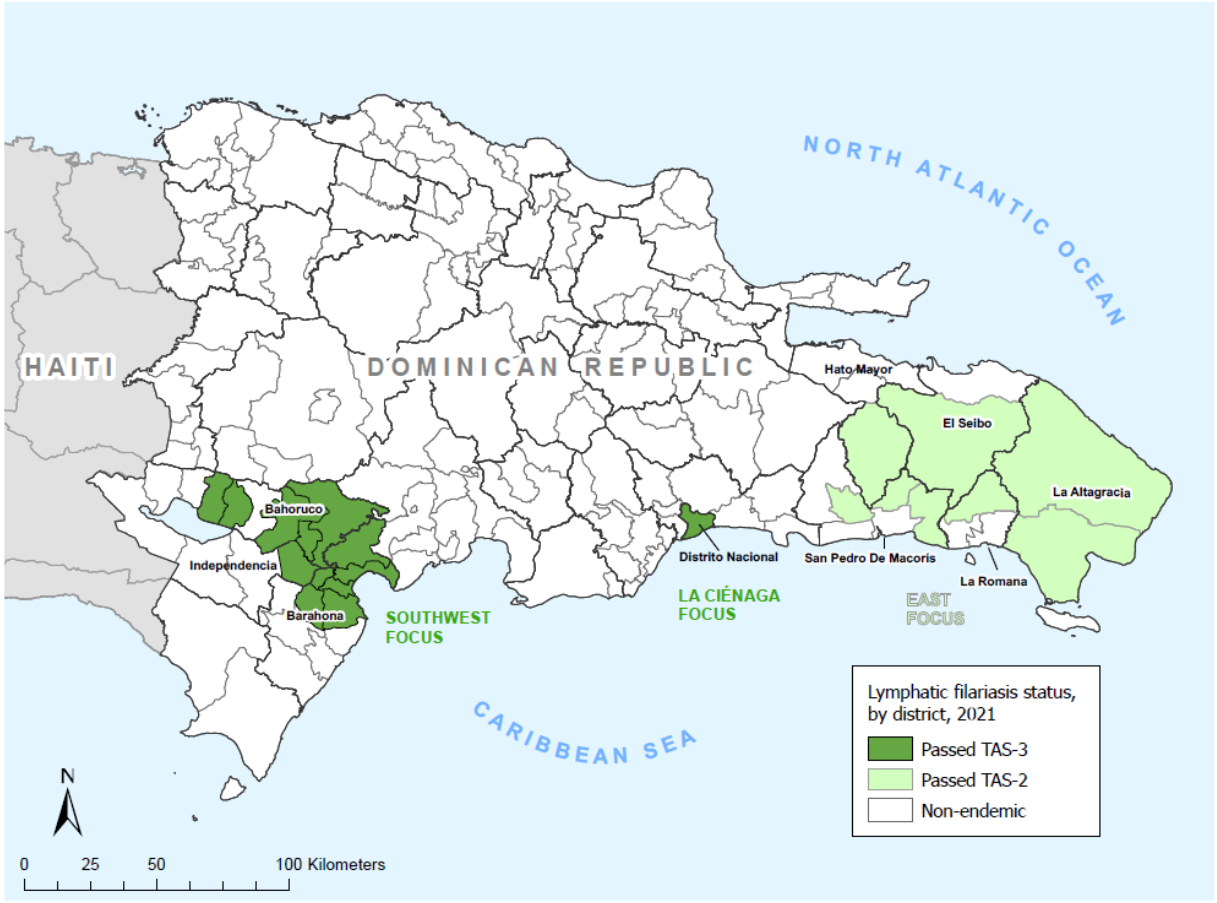


ANNEX 6. Summary of LF transmission assessment survey (TAS) results in implementation units (IUs) conducted in 2021, by evaluation unit (EU), Haiti.

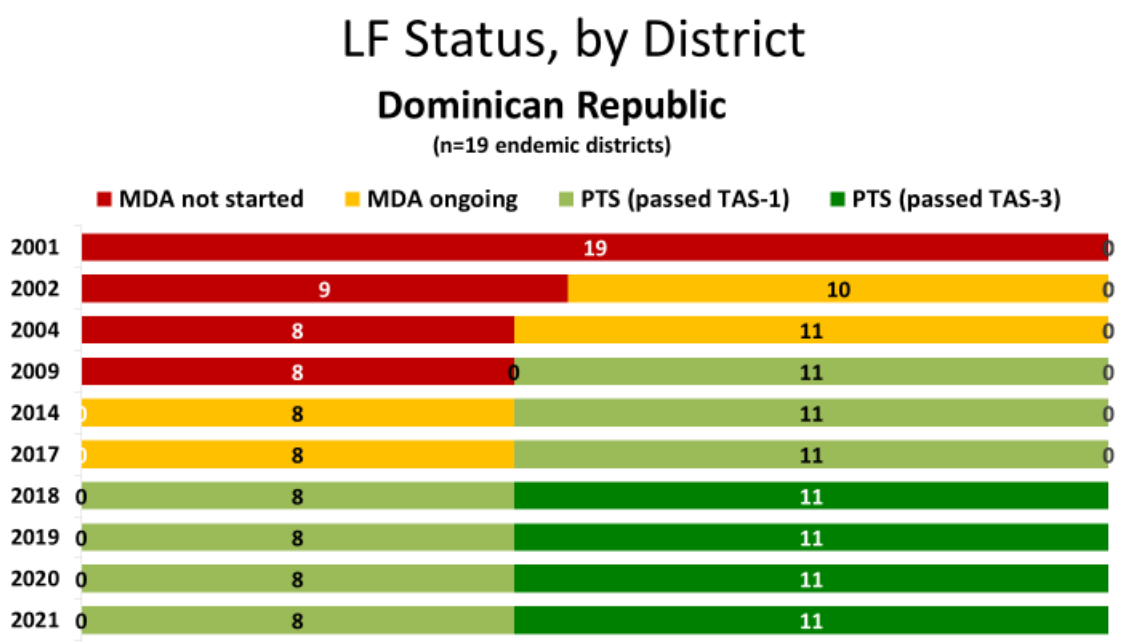
TAS	Department	No. of IUs	IU name(s)	TAS Implementing Partner	Survey Date	Target Sample Size	TAS Critical Cut-off	Num FTS tested (LF)	Num FTS pos (LF)	TAS Result
TAS-1	Nord	1	Dondon	IMA/RTI/USAID	Feb. 2021	891	11	535*	3	Undecided
TAS-2	Ouest	1	Kenscoff	IMA/RTI/USAID	Sept. 2021	1356	16	342*	0	Undecided
TAS-3	Nord	1	Plaisance	IMA/RTI/USAID	Sept. 2021	1376	16	453*	5	Undecided
TAS-3	Nord	1	Borgne	IMA/RTI/USAID	Sept. 2021	1368	16	516*	0	Undecided
TAS-3	Nord	3	Bas-Limbe, Port Margot, Pilate	IMA/RTI/USAID	Sept. 2021	1524	18	576*	1	Undecided
TAS-3	Nord-Est	9	Capotille, Carice, Mombin-Crochu, Ferrier, Perches, Fort-Liberté, Vallières, Mont-Organisé, Ouanaminthe	IMA/RTI/USAID	Sept. 2021	1392	16	1184*	2	Undecided
TAS-3	Nord-Est	3	Sainte Suzanne, Terrier Rouge, Trou Du Nord	IMA/RTI/USAID	Sept. 2021	1392	16	532*	1	Undecided
TAS-3	Nord-Ouest	1	Chansolme	IMA/RTI/USAID	Sept. 2021	530	6	531	5	Pass
	TOTAL	**20**				**9,829**		**4,669**	**17**	

*Target sample size not met.

ANNEX 7. Lymphatic filariasis elimination status, by district, the Dominican Republic, December 2021



ANNEX 8. Lymphatic filariasis elimination program status over time, by district, the Dominican Republic.



ANNEX 9. Summary of LF survey results in implementation units (IUs) conducted in 2021, by evaluation unit (EU), the Dominican Republic.

Survey	Foci	No. of IUs	No. Of Clusters	No. targeted	No. tested	FTS(+)	Critical cut-off	Decision
TAS-2	East	8	75	909	1752	2	11	Pass
PTS*	La Ciénaga	1	3	594	956	0	7	Pass

*PTS conducted after passing TAS-3.

ANNEX 10. Milestones: Hispaniola Initiative

2021: The Dominican Republic reported the lowest number of malaria cases in the country (290) since 1975 (when there were 159). PTS surveys for LF are completed in the East and La Ciénaga foci of the Dominican Republic that indicate LF transmission remains interrupted in both foci. The country launches the first ever support group for LF patients.

TCC and MSPP conduct surveys to measure post-LF MDA coverage and LF and malaria prevalence in Leogane and Gressier districts. Haitian president Jovenel Moïse was assassinated on July 7th exacerbating instability in the country.

Progress reports on efforts to eliminate malaria and lymphatic filariasis from Hispaniola were presented to ITFDE.

2020: The COVID-19 pandemic disrupts public programs globally. TCC supports two rounds of MDA for LF in Léogâne and Gressier, Haiti—one in February–March (delayed from 2019) and one in December. TCC establishes an additional 12 CHCs in Haiti and supports community engagement for a second Malaria Zero MDA campaign. PTS surveys for LF are completed in the Southwest focus of the Dominican Republic; results indicate LF transmission remains interrupted.

2019: TCC establishes 36 more CHCs in Grand'Anse, Haiti.

2018: The East focus passes TAS-1, meaning all formerly LF-endemic areas of the Dominican Republic qualify to stop MDA. In partnership with Malaria Zero, TCC establishes 23 CHCs in Haiti and supports community engagement for a pilot IRS-MDA campaign in select areas of Grand'Anse, Haiti.

2017: The Dominican Republic and Haiti won a Malaria Champions of the Americas Award recognizing their outstanding work in interrupting malaria transmission and developing local systems to access malaria diagnosis and treatment.

2016: TCC conducted a survey for malaria and LF in agricultural areas across the Dominican Republic to investigate the burden of these diseases in isolated communities historically suspected of being reservoirs for disease transmission.

2015: TCC, the ministries of health in Haiti and the Dominican Republic, and other partners formed a consortium, known as the Malaria Zero alliance, with funding from the Bill & Melinda Gates Foundation, to accelerate malaria elimination on Hispaniola. TCC led community engagement to promote and deliver community-based interventions for malaria elimination.

As part of Malaria Zero activities, TCC staff helped develop curriculum and served as instructors for malaria elimination training for MSPP staff, and drafted plans for Malaria Zero implementation.

2014: The Hispaniola Initiative expanded institutional support for malaria and LF elimination in Hispaniola. In Haiti, TCC participated in meetings to update Haiti's National Strategic Plan for malaria. In the Dominican Republic, TCC provided financial support for LF MDA launching in the East and technical assistance for an LF TAS in the La Ciénaga area of Santo Domingo.

TCC also commissioned an economic study to provide an updated cost of eliminating malaria and LF in Hispaniola.

Progress reports on efforts to eliminate malaria and LF in Hispaniola were presented to ITFDE.

2013: TCC sponsored additional meetings to continue binational coordination of malaria and LF elimination activities.

2012: TCC sponsored four binational meetings to update malaria and LF elimination plans. In November, ITFDE reviewed progress on malaria and LF elimination in Hispaniola.

2011: President Carter participated in the first launching of MDA for LF in metropolitan Port-au-Prince, Haiti.

2009: Haiti and the Dominican Republic produced a binational plan to eliminate malaria in Hispaniola by 2020. Haiti also produced a national plan to eliminate LF by 2020. In October, President Carter met with heads of state of both countries to mobilize support for these plans.

2008: TCC helped the ministries of health establish a cross-border pilot project to target malaria in Ouanaminthe, Haiti (pop. 92,000), and Dajabón, Dominican Republic (pop. 27,000). The project included purchase and distribution of insecticide-treated bed nets;

provision of laboratory supplies, motorbikes, and other equipment; training for health staff; and protocol standardization for malaria diagnosis and treatment.

2006: ITFDE concluded that implementation of an integrated comprehensive program to eliminate both malaria and LF on the island of Hispaniola is technically feasible and medically desirable and would be economically beneficial to both the Dominican Republic and Haiti.

ANNEX 11. Carter Center-Authored Hispaniola Publications

2021 publications shown in bold.

Gonzales M, Noland GS, Mariano EF, Blount S. Lymphatic filariasis elimination in the Dominican Republic: History, progress, and remaining steps. *PLoS Negl Trop Dis.* 2021 Aug 10;15(8):e0009590

Beau De Rochars Madsen VE, Keys H, Samuels SK, Jo A, Noland GS, Gonzales M, Blount S, Mainous AG. Prevalence of Diabetes, Prediabetes, and Associated Risk Factors Among Agricultural Village Residents in the Dominican Republic. *Am J Trop Med Hyg*. 2021 Jun 2;104(6):2241-2250.

World Health Organization. Summary of the 32nd meeting of the International Task Force for Disease Eradication, 4–5 May 2021. *Wkly Epidemiol Rec* 2021: 96: 329-52.

Keys HM, Ureña K, Reyes J, Bardosh K, Pell C, Puello J, Blount S, Noland GS. Rapid ethnographic assessment for potential anti-malarial mass drug administration in an outbreak area of Santo Domingo, Dominican Republic. *Malaria J*. 2021 Feb 8;20(76). https://doi.org/10.1186/s12936-021-03594-5

Valdez D, Keys H, Ureña K, Cabral D, Camilo F, Ogando EC, Mercedes L, Noland GS, Blount SB, Lavery JV, Desir L, Puello J. Malaria outbreak response in urban Santo Domingo, Dominican Republic: lessons learned for community engagement. *Rev Panam Salud Publica.* 2020;44:e92 https://doi.org/10.26633/ RPSP.2020.92

Wodnik BK, Louis DH, Joseph M, Wilkers LT, Landskroener SD, Desir L, Lemoine JF, Lavery JV. The roles of stakeholder experience and organizational learning in declining mass drug administration coverage for lymphatic filariasis in Port-au-Prince, Haiti: A case study. *PLoS Negl Trop Dis.* 2020 May 29;14(5):e0008318. doi: 10.1371/journal.pntd.0008318. eCollection.

Oviedo A, Knipes A, Worrell C, Fox LM, Desir L, Fayette C, Javel A, Monestime F, Mace K, Chang MA, Udhayakumar V, Lemoine JF, Won K, Lammie PJ, Rogier E. Combination of Serological, Antigen Detection, and DNA Data for Plasmodium falciparum Provides Robust Geospatial Estimates for Malaria Transmission in Haiti. *Sci Rep.* 2020 May 21;10(1):8443. doi: 10.1038/s41598-020-65419-w.

Keys HM, Noland GS, De Rochars MB, Taylor TH, Blount S, Gonzales M. Perceived discrimination in bateyes of the Dominican Republic: results from the Everyday Discrimination Scale and implications for public health programs. *BMC Public Health*. 2019 Nov 12;19(1):1513. doi: 10.1186/s12889-019-7773-2.

Keys HM, Noland GS, De Rochars MB, Blount S, Gonzales M. Prevalence of malaria and lymphatic filariasis in bateyes of the Dominican Republic. *Infect Dis Poverty*. 2019 May 27;8(1):39. doi: 10.1186/s40249-019-0547-3.

Druetz T, Andrinopoulos K, Boulos LM, Boulos M, Noland GS, Desir L, Lemoine JF, Eisele TP. "Wherever doctors cannot reach, the sunshine can": overcoming potential barriers to malaria elimination interventions in Haiti. *Malar J*. 2018 Oct 29;17(1):393. doi: 10.1186/s12936-018-2553-5.

Keys H, Gonzales M, Beau de Rochars M, Blount S, Noland GS. Building Trust through Lymphatic Filariasis Elimination: A Platform to Address Social Exclusion and Human Rights in the Dominican Republic. *Health Hum Rights*. 2018 Jun;20(1):41-52.

Noland GS, Blount S, Gonzalez M. Post-Mass Drug Administration Transmission Assessment Survey for Elimination of Lymphatic Filariasis in La Ciénaga, Dominican Republic. *Am J Trop Med Hyg*. 2015 Dec;93(6):1292-4. doi: 10.4269/ajtmh.15-0204. Epub 2015 Oct 26.

Anonymous. "Meeting of the International Task Force for Disease Eradication – November 2012." *Weekly Epidemiological Record* 2013 **88**(7): 75-80.

Anonymous. "Meeting of the International Task Force for Disease Eradication - 12 May 2006." *Weekly Epidemiological Record* 2007 **82**: 25-32.

ANNEX 12. List of Program Review Participants

The Carter Center Atlanta
Ms. Paige Alexander
Ms. Sadie Bazur-Leidy
Dr. Stephen Blount
Dr. Eve Byrd
Dr. Jenna Coalson
Mr. Yohannes Dawd
Dr. Luccene Desir
Ms. Maureen Donato
Ms. Andrea Echols
Ms. Cassandra Grant
Ms. Emily Griswold
Dr. Karen Hamre
Ms. Madelle Hatch
Dr. Donald Hopkins
Dr. Kashef Ijaz
Ms. Molly Ison
Ms. Ursula Hamilton
Ms. Reet Kapur
Ms. Nicole Kruse
Ms. Abby Miller
Dr. Gregory Noland
Ms. Brianna Poovey
Ms. Lindsay Rakers
Dr. Frank Richards
Ms. Elaina Sinclair
Ms. Shandal Sullivan
Mr. Marc Tewari
Ms. Lauren Thrash
Mr. Craig Withers
Ms. Sara Wom

Ministry of Public Health – Dominican Republic
Dr. Manuel Gonzales
Dr. Manuel Tejada
Dr. Keyla Ureña
Dr. Dania Vólquez

Ministry of Health and Population – Haiti
Dr. Jean Frantz Lemoine
Dr. Marc-Aurèle Telfort

Brain and Behavior Research Foundation
Ms. Lauren Duran

The Carter Center Nigeria
Mr. George Chiedo
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CDC
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Dr. Jonas Rigodon
Dr. Eric Rogier
Dr. Kimberly Won
Ms. Caitlin Worrell

CHAI
Mr. Luis Miguel Perez

Emory University
Dr. Hope Bussenius
Dr. Michelle Grek
Dr. James Lavery
Dr. Lance Waller
Mr. Lee Wilkers

Federal Ministry of Health Sudan
Mr. Elrofaay Abdelazeam

The Leona M. and Harry B. Helmsley Charitable Trust
Ms. Trista Kontz-Bartels

IMA World Health
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LSHTM
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Federal Ministry of Health Ethiopia
Dr. Fikreab Kebede

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Eng. Dalila Rios
Dr. Mauricio Sauerbrey

PAHO
Dr. Cynthia Bernard
Dr. Roberto Montoya
Dr. Santiago Nicholls
Dr. Ronaldo Scholte

PATH
Dr. Laurence Slutsker

RTI International
Ms. Molly Brady
Ms. Katie Crowley

SACAICET
Dr. Carlos Botto

University of Florida
Dr. Valery Madsen Beau de Rochars

University of Toronto
Ms. Breanna Wodnik

University of Washington
Dr. Kevin Bardosh

USAID
Ms. Penny Smith
Mr. Rob Henry

ANNEX 13. 2021 Hispaniola Initiative Program Review Agenda

Hispaniola Initiative Program Review Agenda			
Thursday, March 3, 2022			
Start	**End**	**Title**	**Speaker**
8:00 AM	8:05 AM	Welcome	Dr. Gregory Noland
8:05 AM	8:10 AM	Welcoming Remarks	Dr. Kashef Ijaz
8:10 AM	8:15 AM	Welcoming Remarks	Paige Alexander
8:15 AM	8:20 AM	Goodwill Message	Dr. Tedros Ghebreyesus (WHO)
8:20 AM	8:35 AM	Hispaniola Initiative Overview	Dr. Gregory Noland
8:35 AM	8:40 AM	Hispaniola Initiative Documentary	
8:40 AM	9:10 AM	LF Elimination Progress in the Dominican Republic	Dr. Keyla Urena (MSP) Dr. Manuel Gonzales (MSP)
9:10 AM	9:25 AM	Discussion	
9:25 AM	9:55 AM	LF Elimination Progress in Haiti	Dr. Marc-Aurele Telfort (MSPP)
9:55 AM	10:10 AM	Discussion	
10:10 AM	10:20 AM	BREAK	
10:20 AM	10:35 AM	Haiti LF Coverage and Prevalence Survey	Dr. Karen Hamre
10:35 AM	10:45 AM	Discussion	
10:45 AM	11:00 AM	Haiti LF Community Engagement	Dr. Jim Lavery (Emory)
11:00 AM	11:10 AM	Discussion	
11:10 AM	11:25 AM	Haiti LF IDA Program Implementation	Dr. Luccene Desir
11:25 AM	11:35 AM	Discussion	
11:35 AM	11:50 AM	Haiti LF Mental Health Project	Ms. Sadie Bazur-Leidy
11:50 AM	12:00 PM	Discussion	
12:00 PM	12:00 PM	Day 1 Closure	Dr. Gregory Noland

Hispaniola Initiative Program Review Agenda			
Friday, March 4, 2022			
Start	**End**	**Title**	**Speaker**
8:00 AM	8:05 AM	Day 2 Introduction	Dr. Gregory Noland
8:05 AM	8:35 AM	Malaria Elimination in Haiti	Dr. Marc-Aurèle Telfort (MSPP)
8:35 AM	8:50 AM	Discussion	
8:50 AM	9:05 AM	Haiti Malaria Community Engagement & COVID-19	Dr. Kevin Bardosh (Univ. Washington)
9:05 AM	9:15 AM	Discussion	
9:15 AM	9:45 AM	Malaria Elimination in the Dominican Republic	Dr. Keyla Ureña (MSP)
9:45 AM	10:00 AM	Discussion	
10:00 AM	10:10 AM	BREAK	
10:10 AM	10:30 AM	Regional Malaria Elimination	Dr. Roberto Montoya (PAHO)
10:30 AM	10:40 AM	Discussion	
10:40 AM	11:00 AM	Malaria Ethnographic Research in the D.R.	Dr. Hunter Keys
11:00 AM	11:10 AM	Discussion	
11:10 AM	11:30 AM	Freedom From Infection: A Framework to Support Evidence-Based Decision-Making for Malaria Elimination	Dr. Gillian Stresman (LSHTM)
11:30 AM	11:40 AM	Discussion	
11:40 AM	11:55 AM	Closing Discussion	Dr. Gregory Noland
11:55 AM	12:00 PM	Meeting Closure	Dr. Gregory Noland