



2019 Hispaniola Program Review Meeting: Summary and Recommendations

May 2020

The sixth annual Carter Center Hispaniola Initiative Program Review meeting scheduled for March 10th, 2020 was cancelled due to the COVID-19 pandemic. In its place, a virtual meeting of Carter Center staff and select partners was convened on April 3rd, 2020. The purpose of the meeting was to review progress in elimination of malaria and lymphatic filariasis in Haiti and the Dominican Republic in 2019 and to make recommendations for activities in 2020.

Carter Center participants were: Dr. Stephen Blount, Dr. Luccène Désir, Mr. Jim Kavanagh, Ms. Nicole Kruse, Dr. Gregory Noland (chair), Ms. Claire Pomykala, Ms. Brianna Poovey, Dr. Frank Richards, Ms. Lauren Shewmaker, Dr. Dean Sienko, Ms. Emily Staub, Ms. Sarah Yoss.

Other participants were: Dr. Kevin Bardosh (University of Washington), Dr. Madsen Beau De Rochars (University of Florida), Dr. Manuel González (CECOVEZ), Dr. James Lavery (Emory University), Dr. José Puello (CECOVEZ), Dr. Keyla Ureña (CECOVEZ), Mr. Lee Wilkers (Emory University).

Special thanks to Dr. Luccène Désir for performing translation during the meeting.

Background

The Carter Center's Hispaniola Initiative works with the ministries of health in Haiti and the Dominican Republic to eliminate malaria and lymphatic filariasis (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 countries¹. The Carter Center 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, The Carter Center supported regular binational meetings to promote coordination between the Haitian and Dominican

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

ministries of health. In 2014, The Carter Center expanded its support for malaria and LF elimination in Hispaniola, including: i) continued support for bi-national 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.

2019 witnessed the continuation of political and social instability in Haiti. The country was crippled by widespread anti-government protests calling for President Jovenel Moïse, winner of the disputed November 2016 election, to step down. As a result, many businesses, schools, and government agencies across the country were closed or not fully operational throughout 2019. The United Nations (U.N.) ended its 15-year peace-keeping missions in Haiti with the closure of the U.N. Mission for Justice Support in Haiti (MINUJUSTH) on October 15th, 2019, which followed the 2004-2017 U.N. Stabilization Mission in Haiti (MINUSTAH).

Malaria Elimination in Haiti - presented by Dr. Luccene Desir

The National Malaria Control Program (PNCM) coordinates malaria elimination activities for the Haitian Ministry of Public Health and Population (MSPP). The goals of the National Strategic Plan for the Elimination of Malaria in Haiti (2016-2022) are to eliminate autochthonous malaria transmission (zero local cases) by 2022 and to achieve zero malaria deaths by 2020. In 2019, a total of 9,340 cases of malaria and seven deaths were reported by MSPP (Annex 1). This represents an 89% decrease in cases since 2010, when 84,153 cases were reported following the earthquake in January of that year. Compared to the previous year, cases increased 11% between 2018 (8,426) and 2019. This reversed a trend of two consecutive declines in annual reported cases. The increase in 2019 was not an artifact of expanded surveillance, as fewer people were tested in 2019 (224,104) versus 2018 (287,522). Together with the political and social instability, this suggests that the 2019 value likely represents an underestimate of malaria cases in the country.

Geographically, Grande Anse department accounted for 54% of cases nationally (Annex 2). An additional 16% occurred in the neighboring Sud department. All other departments individually accounted for less than 10% of cases nationally.

The Carter Center leads community engagement activities for Malaria Zero—a consortium of partners² supported by the Bill & Melinda Gates Foundation to accelerate malaria elimination in Hispaniola. In 2019, The Carter Center established 36 community health councils (CHCs) in seven communes of Grande Anse. In total, 59 CHCs have been established in Grande Anse since 2018. In 2019, The Carter Center also finalized contracts with national cellular providers Natcom (in April) and Digicel (in August) to establish a malaria hotline for MSPP. The hotline will

² Partners include the Ministry of Public Health and Population of Haiti, the Ministry of Public Health and Social Assistance of the Dominican Republic, the U.S. Centers for Disease Control and Prevention, the CDC Foundation, the Pan American Health Organization, The Carter Center, the Clinton Health Access Initiative, the London School of Hygiene & Tropical Medicine, and Tulane University School of Public Health and Tropical Medicine

provide malaria-related information to callers and serve as a reporting public mechanism for concerns related to malaria service delivery, diagnostics, and treatment.

Malaria Elimination in the Dominican Republic - presented by Dr. Keyla Ureña.

The Dominican Ministry of Public Health (MSP) reported a total of 1314 cases of malaria in 2019 (Annex 1). This represents a 166% increase over the 494 cases reported in 2018—the largest year-over-year percentage increase for the country in the past 45 years. The reported number of persons tested for malaria decreased from 168,419 in 2018 to 108,696 in 2019. The number of imported cases declined from 51 (10.5% of the national total) in 2018 to 23 (1.8% of the national total) in 2019. Countries of origin were: Guyana (11 cases), Venezuela (6), African countries (4), and Haiti (2). Fourteen of these were *Plasmodium vivax* (nine from Guyana, five from Venezuela). All other imported cases and local cases were *Plasmodium falciparum*.

Transmission remained relatively stable the first half of the year averaging around 10 reported cases per week, until mid-July, when a peak of 40 cases was observed. Following a brief decline, transmission resurged in mid-October and continued to increase throughout the rest of the year, peaking at 99 case in epidemiological week 50 (December).

Geographically, metropolitan Santo Domingo, comprised of Santo Domingo province (742 cases) and the National District (365 cases) accounted for 85.7% of cases nationally. Yet incidence in all districts was less than 1 case per 1000 persons per year (Annex 3). This continues the trend observed in recent years of increasing transmission in the capital area coupled with declines in other locations in the country. Prior to 2014, metro Santo Domingo accounted for less than 10% of cases nationally. Within Santo Domingo, the two main foci are the Los Tres Brazos neighborhood in Santo Domingo East and La Ciénaga in Santo Domingo West that account for 65.1% and 30.9%, respectively, of all autochthonous cases nationally in 2019. Response measures have included active surveillance, vector control and community education by MSP and local health, along with training of community health workers for local fever screening, testing with rapid diagnostic tests and treatment (described by Valdez, Keys, Ureña, et al., submitted for review).

Insecticide susceptibility studies found evidence of resistance (<90% mosquito mortality 30 minutes after exposure) to four out of five pyrethroids evaluated for indoor residual spray (IRS), and evidence of resistance (<70% mosquito mortality after 24 hours exposure) to permethrin-treated long-lasting insecticide treated nets (LLINs).

Lymphatic Filariasis Elimination in Haiti - presented by Dr. Luccene Desir

The National Program to Eliminate LF (NPELF) coordinates LF elimination activities for the Haitian MSPP. Annual mass drug administration (MDA) with albendazole (donated by GSK) and diethylcarbamazine (DEC, donated by Eisai since 2013) was piloted in 2000 in Léogâne, an LF-endemic area west of the capital Port-au-Prince. Following nationwide mapping surveys from 2000-2001, NPELF considered all districts (*communes*) in the country in need of MDA.

MDA was scaled-up in 2003 beginning with high-burden districts. Full geographic coverage of all districts nationwide was achieved in 2011 with the initiation of MDA in metropolitan Port-au-Prince. President Carter, who was in Haiti to assist with post-earthquake recovery efforts, helped promote launching of the Port-au-Prince MDA campaign.

By the end of 2019, 118 (84%) of the 140 communes nationwide have met criteria to stop MDA by passing the transmission assessment survey (TAS-1) (Annex 4 and 5). This includes 66 districts that have also passed TAS-2, the first of two post-treatment surveillance surveys recommended by WHO. Six TAS surveys (all TAS-2) encompassing 49 districts were completed in 2019 (Annex 6). Of 8,571 children aged 6-7 years old tested for circulating filarial antigen (CFA) by filariasis test strip (FTS), 14 (0.16%) were FTS-positive. All evaluation units passed TAS-2 in 2019. The surveys also included integrated testing for malaria by rapid diagnostic test (RDT). Eleven (0.13%) children were RDT-positive. TAS surveys in 18 districts, including three districts eligible for TAS-1 stop-MDA surveys, were either not completed or not initiated in 2019 due to the political and security instability.

A total of 6,738,393 people in 19 communes were targeted for MDA in 2019 by NEPLF. Of these, 1,172,728 (17.4%) people in 12 districts were treated. Average epidemiological coverage in treated districts was 72% (range: 55%--80%). MDA in the remaining districts, including Carter Center-supported MDA in Leogane and Gressier, was not conducted as planned in 2019 due to the insecurity.

The second pillar of the WHO framework to eliminate LF as a public health problem is to alleviate suffering for LF patients through morbidity management and disability prevention (MMDP). Only one facility in Haiti, Hôpital Sainte Croix in Leogane, currently provides specialized care for LF patients. A total of 1695 lymphedema patients (82 new and 1613 follow-up patients) were seen in 2019 and 62 hydrocelectomy surgeries performed.

In 2019, the Hispaniola Initiative also launched a pilot project in collaboration with Carter Center Mental Health Program to evaluate the impact of a chronic disease self-management program on LF patient well-being. Baseline evaluation among individuals involved in LF patient support groups (Hope Clubs) revealed that 50% of participants (n=210) were positive for symptoms of depression using a locally validated screening tool. The project is expected to be completed in 2020 and results will be presented at next year's program review meeting.

Lymphatic Filariasis Elimination in the Dominican Republic - presented by Dr. Manuel Gonzalez

In 1998, the Dominican Ministry of Public Health 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 and East—two vast agricultural regions—and La Ciénaga, a small urban focus in the national district of Santo Domingo (distinct from La Ciénaga of Santo Domingo West, a current malaria transmission focus). Starting in 2002, PEFL sequentially scaled-up MDA in these areas using albendazole and DEC. In the Southwest, four rounds were

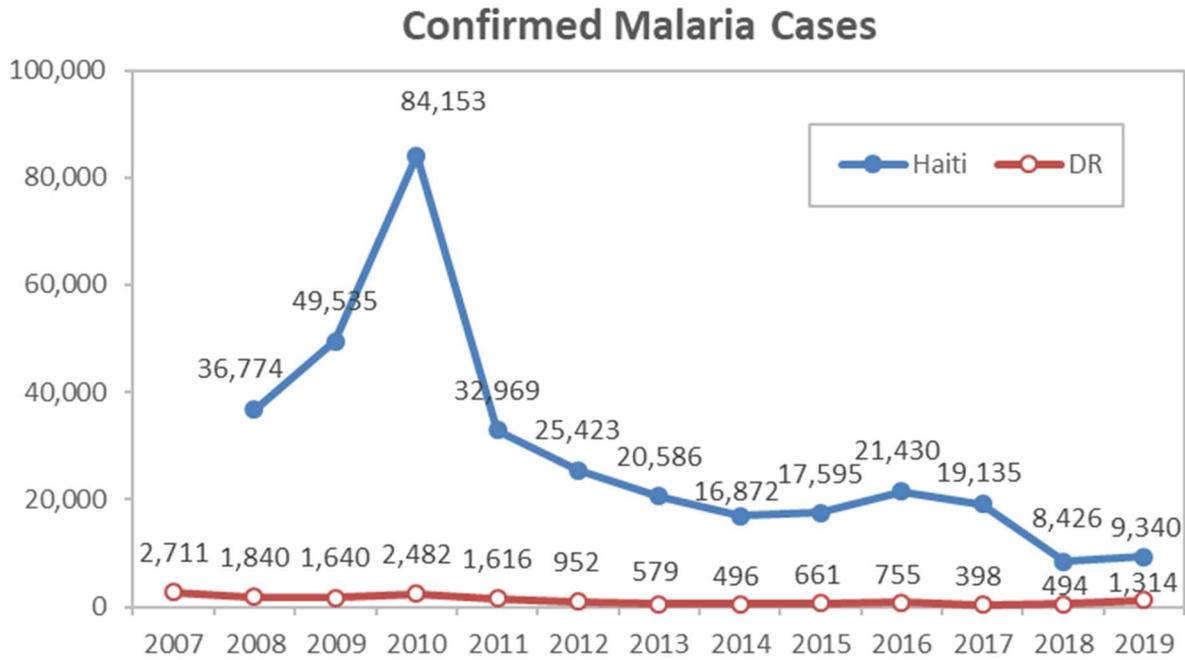
provided between 2002 and 2006 (the 2005 treatment round was skipped due to funding limitations). A fifth round was provided in 2007 only in the region's *bateyes*—agricultural settlement villages deemed to be at greatest risk for LF transmission. Three MDA rounds were provided in La Ciénaga (2004-2006) and in *bateyes* of the East (2014, 2016, 2017). As of 2018, MDA had stopped in all foci (Annex 8 and 9). Post treatment surveillance (PTS) surveys conducted in the Southwest (2009, 2012 and 2018) and in La Ciénaga (2011, 2014, and 2018) indicate that transmission is below hypothesized sustainable levels and that MDA remains unnecessary. Additional PTS surveys are planned to occur in 2020 in each of the three formerly endemic areas, as well as surveys to confirm the absence of transmission across the rest of the country. To fulfill WHO criteria for elimination of LF as a public health problem, PELF must successfully complete the 2020 PTS surveys and a subsequent TAS-3 survey in the East region (scheduled for 2022). It also must demonstrate the provision of MMDDP services in areas with LF patients. The Dominican Institute of Dermatology is the only facility currently serving as a referral facility for lymphedema.

Recommendations for 2020

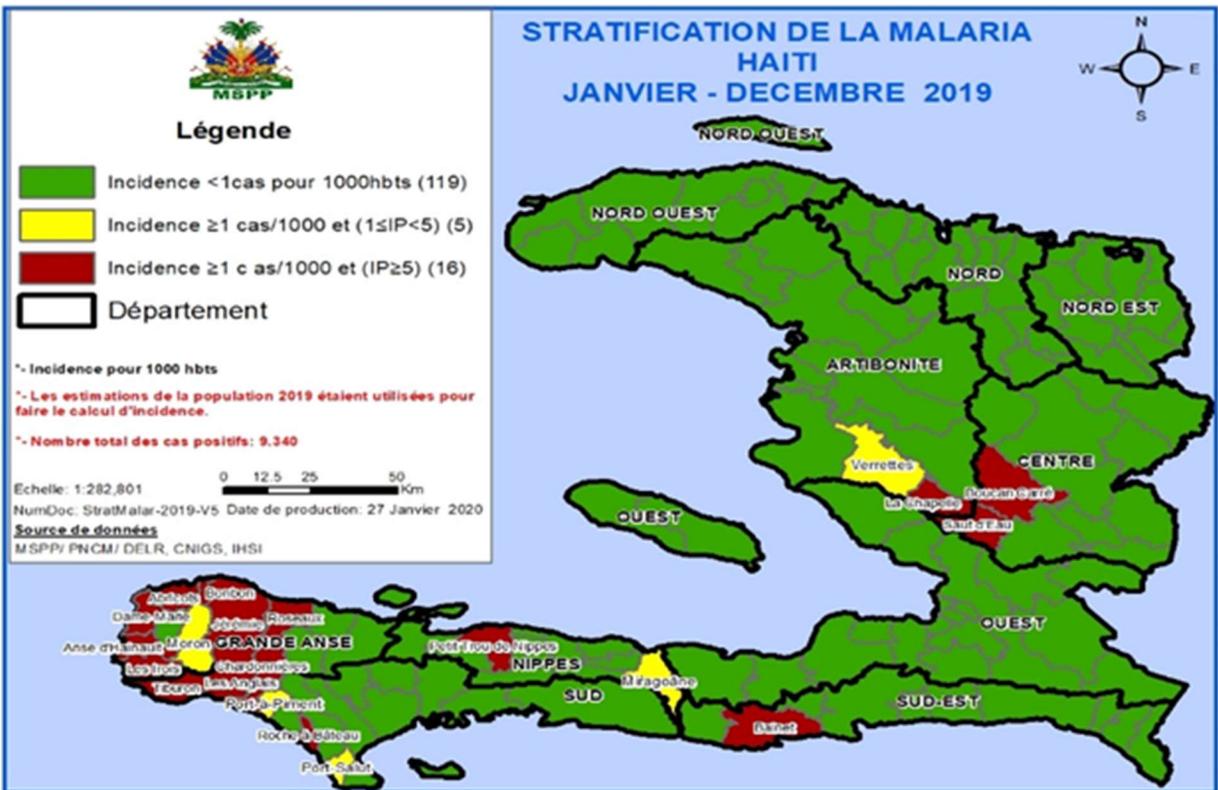
1. Operationalize a malaria hotline in Haiti.
2. Complete community health council (CHC) Implementation Manual and Monitoring and Evaluation Handbook in 2020.
3. Institute regular monitoring and evaluation of CHC activities, including development of electronic dashboards available to all stakeholders.
4. In Grand Anse Department, transition support for CHCs to MSPP. In Sud Department, establish CHCs in high-malaria burden communes in 2020.
5. Urge the Dominican MSP to finalize and release an updated national strategic plan for malaria.
6. The uncontrolled malaria outbreak in the Dominican Republic suggests that more aggressive approaches, such as mass drug administration, should be considered, along with studies of MDA acceptability and compliance (if MDA is implemented).
7. Resume active engagement in the Ouanaminthe-Dajabon cross-border area to re-invigorate binational cooperation.
8. Complete unfinished LF TAS surveys in Haiti from 2019, along with eligible TAS surveys in 2020.
9. Conduct the MDA in Leogane and Gressier originally scheduled for fall 2019.
10. Prepare a manuscript for peer-review publication of the integrated malaria-LF TAS survey results in Haiti.
11. Continue collaboration with HELP group at Emory University to improve MDA coverage for LF, including work with systematic non-compliers funded by the NTD-Support Center at Task Force for Global Health.

12. Support scale-up of LF MMDP in Haiti by organizing workshops to train clinical staff and establish designated referral centers for LF care in each of Haiti's 10 Departments with support from Qatar WISH Foundation.
13. Complete evaluation of LF-Mental Health CDSM pilot project in Haiti with support from the NTD-Support Center at Task Force for Global Health.
14. Submit for publication a manuscript summarizing the history and progress of LF elimination in the Dominican Republic.
15. Conduct the nationwide remapping survey for LF in 2020. This should include integrated morbidity burden assessment and TAS sampling in previously endemic areas.

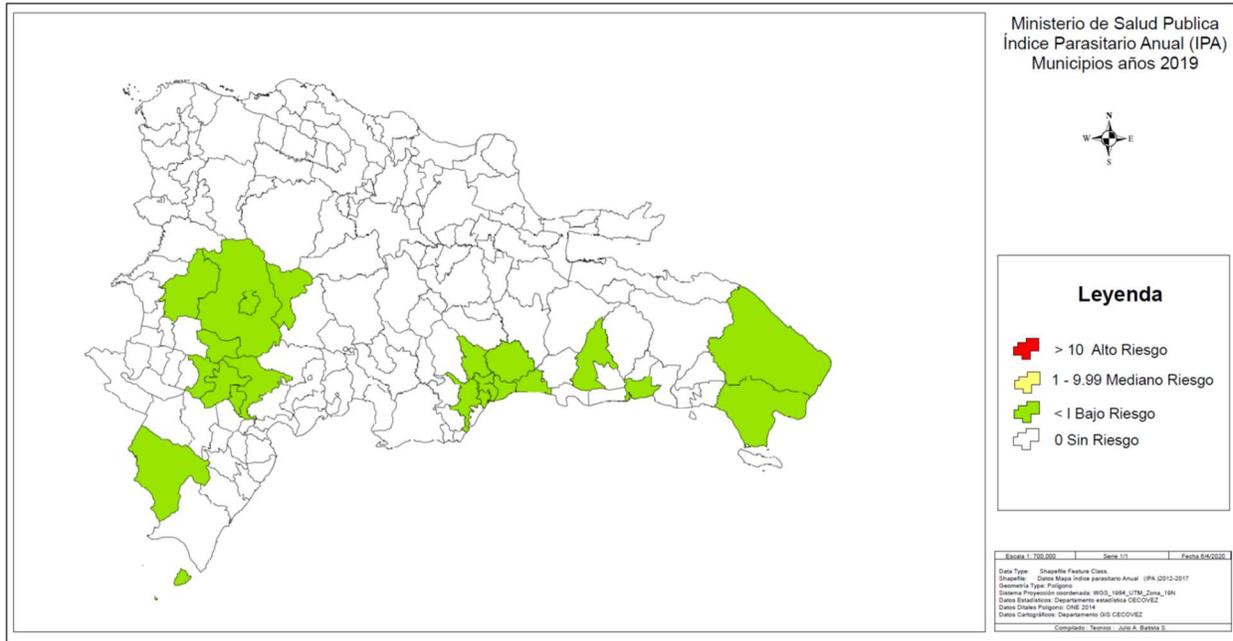
Annex 1. Number of Confirmed Malaria Cases in Haiti and the Dominican Republic, by year (2007-2019).



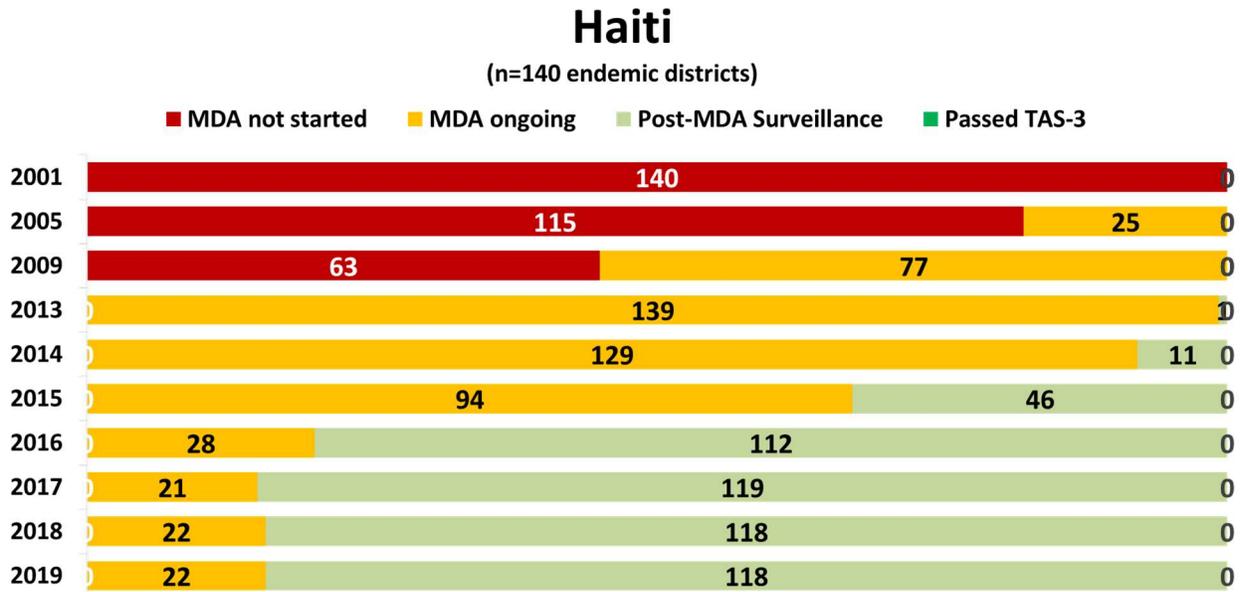
Annex 2. Annual malaria incidence (cases per 1000 persons), by district, Haiti, 2019.



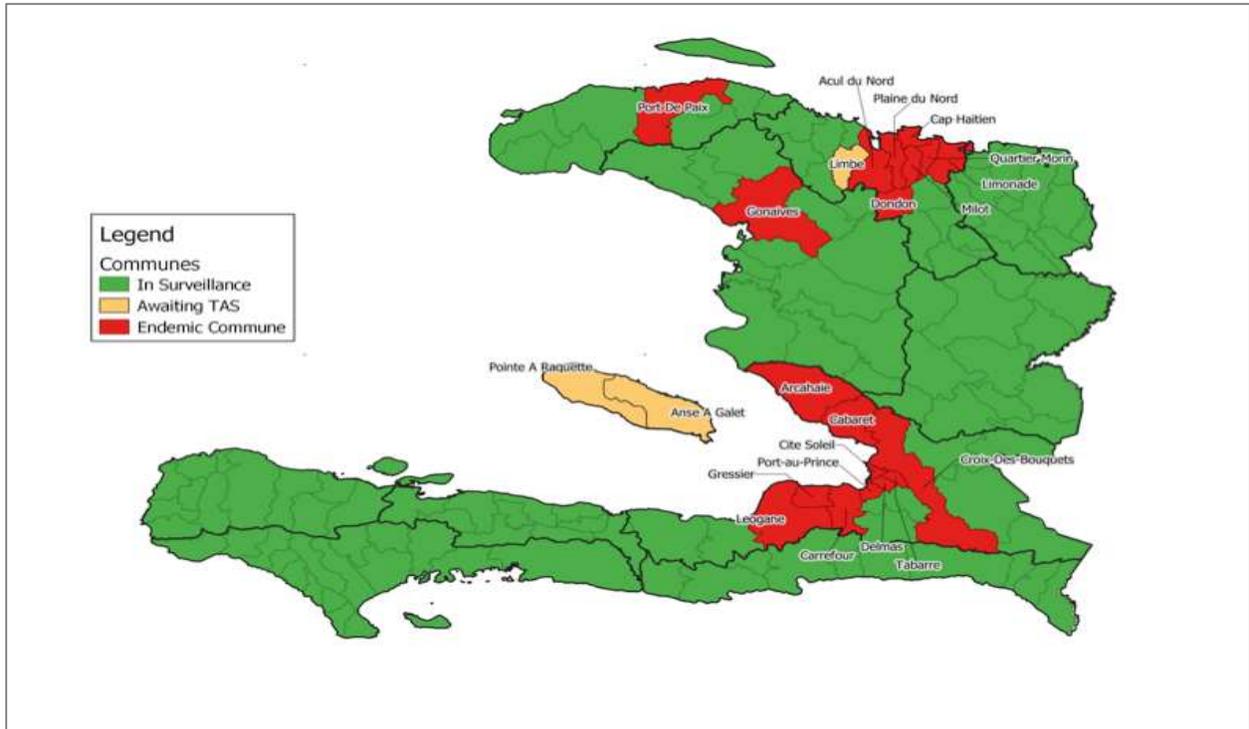
Annex 3. Annual malaria incidence (cases per 1000 persons), by district, the Dominican Republic, 2019.



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



Annex 5. Lymphatic filariasis elimination status, by district (*commune*), Haiti, 2019.



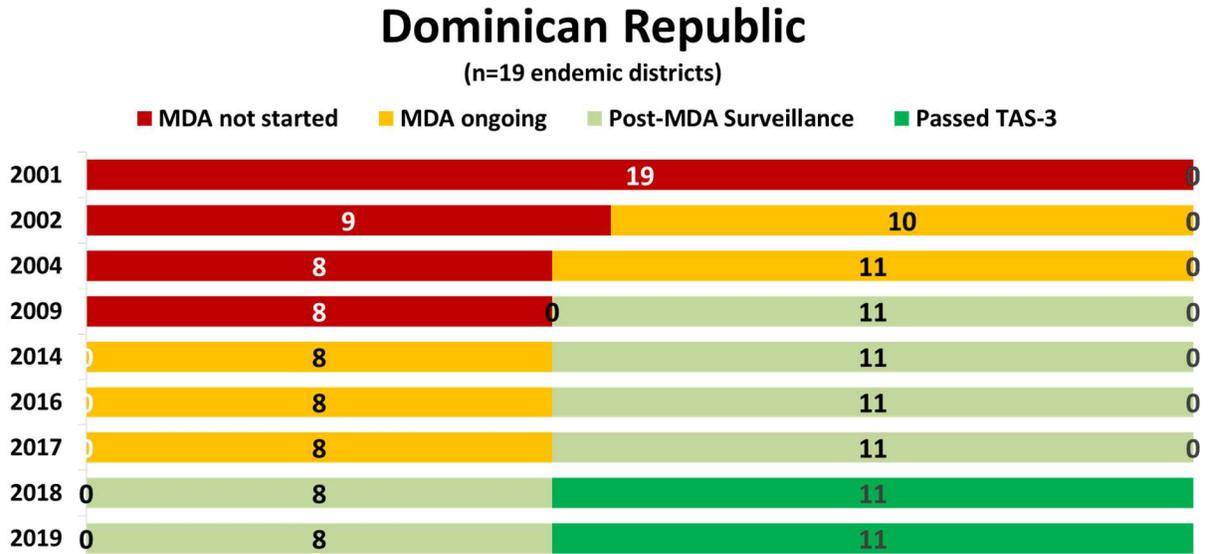
Annex 6. Summary of LF transmission assessment survey (TAS) results completed in 2019, by evaluation unit (EU), Haiti.

TAS	EU	Num of IUs	IU name(s)	Survey Dates (2019)	Target Num of Children	TAS Critical Cut-off	Num FTS tested	Num FTS pos	Num RDT tested	Num RDT pos	TAS Result
TAS-2	Ouest	1	Petion Ville	Aug. 18-Sept. 4	1556	18	1560	1	1560	0	Pass
TAS-2	Centre	11	Hinche, Maissade, Mirebalais, Cerca Carvajal, Cerca la Source, Thomassique, Thomonde, Lascahobas, Belladere, Boucan Carré, Savanette	Aug. 18-Sept. 4	1556	18	1577	0	1577	4	Pass
TAS-2	Sud 1	1	Camp Perrin	May 27-June 4	506	6	653	2	653	0	Pass
TAS-2	Sud 2	18	Les Cayes, Aquin, Torbeck, Saint Louis du Sud, Cavaillon, Baradères, Port Salut, Chantal, Les Anglais, Saint Jean du Sud, Chardonnières, Tiburon, Coteaux, Port a Piment, Roche a Bateau, Lile a Vache, Arniquet, Maniche	May 27-June 13	1552	18	1579	1	1579	1	Pass
TAS-2	Grand Anse	12	Jeremie, Beaumont, Pestel, Corail, Roseaux, Abricots, Bonbon, Moron, Chambellan, Dame-Marie, Anse d'Hainault, Les Irois	May 27-June 13	1552	18	1644	7	1644	4	Pass
TAS-2	Nord 2	6	Pignon, Saint Raphael, La Victoire, Ranquite, Bahon, Grande Riviere du Nord	July 27-Aug 9	1532	18	1558	3	1558	2	Pass
	TOTAL	49			8,254		8,571	14	8,571	11	

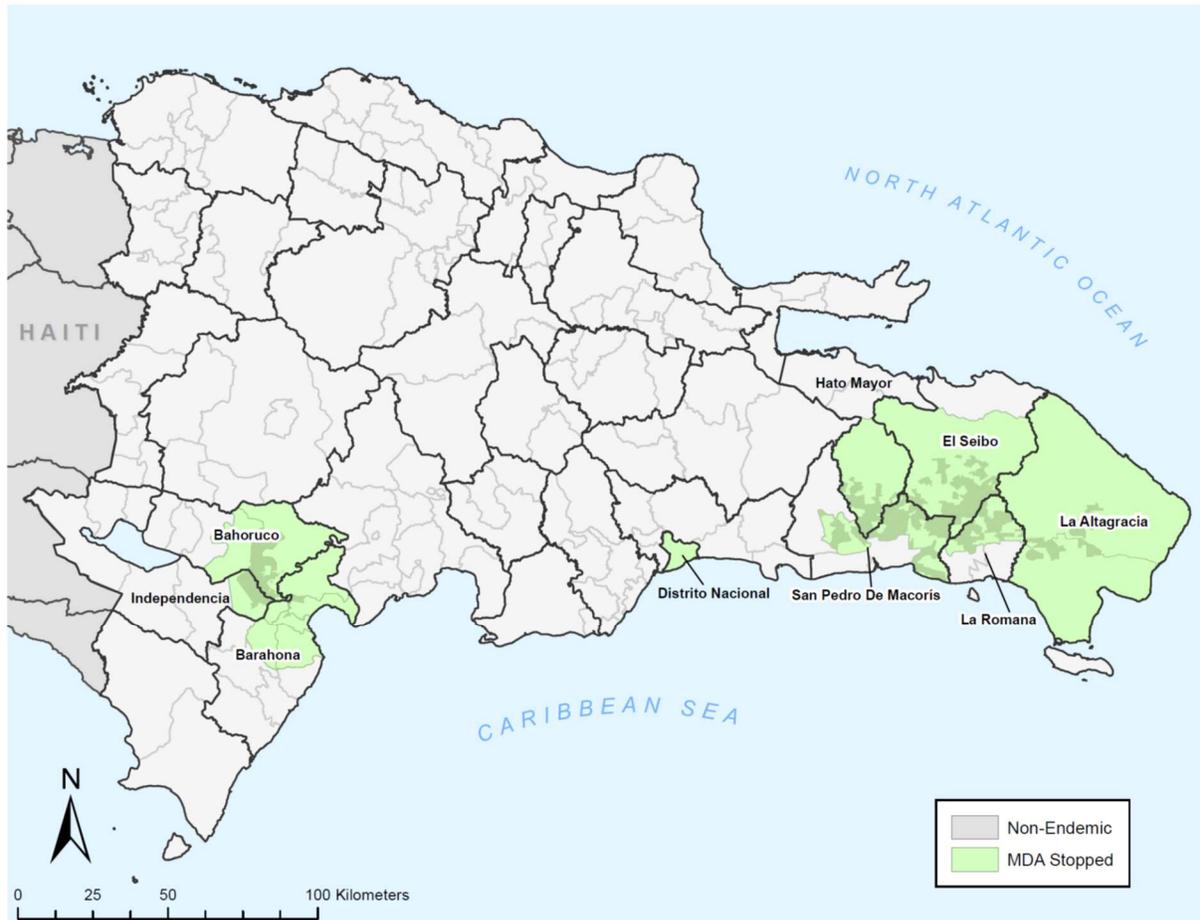
Annex 7. Annual Carter Center-assisted lymphatic filariasis treatments, Haiti, 2019.

Commune	Pop at Risk	Treatment Eligible Pop.	Number Treated	Treatment coverage (%)	Epidemiological treatment coverage (%)
Leogane	268,435	228,170	delayed	0	0
Gressier	47,953	40,760	delayed	0	0
Total	316,388	268,930			

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



Annex 9. Lymphatic filariasis elimination status, by district (*municipio*), the Dominican Republic, 2019. Provinces shown in dark outline. Darker shaded areas within transmission foci indicate *batey* areas.



Annex 10. Carter Center-Authored Hispaniola Publications

2019 publications shown in bold.

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.

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 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.

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.

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.