

# It Can be Done: An Integrated Approach for Controlling and Eliminating Neglected Tropical Diseases

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Inter-American Development Bank  
Social Protection and Health Division

# **It Can be Done: An Integrated Approach for Controlling and Eliminating Neglected Tropical Diseases**

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# Foreword

“Leave no one behind” is listed as the first of “five, big transformative shifts” recommended by the United Nations’ High Level Panel on the Post-2015 Development Agenda in its report calling on the global community to reaffirm the principles of the Millennium Declaration and renew its focus on the world’s poorest and most marginalized people and communities.<sup>1</sup>

There are few groups more marginalized than those suffering from Neglected Tropical Diseases (NTDs). Throughout Latin America and the Caribbean, millions of people of all ages endure excruciating pain, chronic disabilities, and social exclusion due to NTDs. These diseases prevent children from reaching their full potential, reduce adults’ ability to work to support themselves and their families, and subject people to stigmatization by their peers. Although some gains have been made in addressing these debilitating diseases, they continue to devastate poor individuals and communities.

While we emphasize the importance of “leaving no one behind” by working to treat and prevent NTDs, this goal can be achieved in practice only through effective and sustainable interventions. Increasingly, practitioners are finding that integrating efforts across sectors, government agencies and partner organizations can vastly improve the results of NTD control and elimination programs. Since 2008, the Social Protection and Health

Division of the Inter-American Development Bank (IDB) has partnered with the Pan American Health Organization (PAHO) and the Sabin Vaccine Institute’s Global Network for Neglected Tropical Diseases to create the Neglected Tropical Disease Initiative in Latin America and the Caribbean (LAC NTD Initiative). The LAC NTD Initiative, which was supported by a grant from the Bill & Melinda Gates Foundation and loans from IDB’s Water and Sanitation Division, worked with governments, NGOs, and private entities in the region to develop and implement integrated projects that bring together the efforts of different sectors — water and sanitation, education and health — to simultaneously address multiple NTDs in targeted geographic locations. Through a series of demonstration projects in Brazil, Guyana, Haiti, and Mexico, countries were able to show that it is feasible to implement projects that address environmental and behavioral risk factors for NTDs while also reducing transmission through traditional mass drug administration.

With this book we want to share the lessons learned from these four demonstration projects, as well as from the efforts made in collaboration with PAHO and Sabin Vaccine Institute to advocate for NTDs to be included among the top health priorities for the region. It is the first comparative analysis that uses a single methodology to investigate the feasibility of implementing integrated NTD projects. It outlines a flexible framework

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<sup>1</sup> A New Global Partnership: Eradicate Poverty and Transform Economies through Sustainable Development: The Report of the High-Level Panel of Eminent Persons on the Post-2015 Development Agenda, <http://www.post2015hlp.org/wp-content/uploads/2013/05/UN-Report.pdf>.

that can be applied to similar projects to increase the level of integration of their various components. Most importantly, it highlights lessons and challenges that we hope will be used by program managers, policy makers, and donors to create integrated programs to control and eliminate NTDs in Latin America and the Caribbean and around the world.

On behalf of the Social Protection and Health Division and all of our partners and funders in the Neglected Tropical Disease Initiative in Latin America and the Caribbean, I sincerely hope that you find this publication insightful, useful, and enjoyable to read.

**Ferdinando Regalia**

Social Protection and Health Division Chief  
Inter-American Development Bank

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# Acronyms and Abbreviations

CAMEP	Autonomous Metropolitan Water Company, Haiti (Centrale Autonome Métropolitaine d'Eau Potable)
CDC	Centers for Disease Control and Prevention
CHW	Child Health Week
CIE	Epidemiological Research Center, Chiapas (Centro de Investigación Epidemiológica)
CMO	Chief Medical Officer
DALY	Disability-Adjusted Life Year
DEC	Diethylcarbamazine
DFATD	Department of Foreign Affairs, Trade and Development Canada
DINEPA	National Directorate of Water and Sanitation, Haiti (Direction Nationale de l'Eau Potable et de l'Assainissement)
DSP	Directorate of Public Health, Chiapas (Dirección de Salud Pública)
GSIP	Georgetown Sanitation Improvement Project
GWI	Guyana Water Incorporated
ICT	Immunochromatographic Test
IDB	Inter-American Development Bank
IMA	IMA World Health
IMIP	Professor Fernando Figueira Institute of Integrative Medicine (Instituto de Medicina Integral Professor Fernando Figueira)
ISECH	Chiapas State Health Institute (Instituto de Salud del Estado de Chiapas)
KAP	Knowledge, attitude, and practice
LAC	Latin America and the Caribbean
LF	Lymphatic Filariasis
LNSP	National Public Health Laboratory, Haiti (Laboratoire National de la Sante Publique)
M&E	Monitoring and Evaluation
MDA	Mass Drug Administration

MENFP	Ministry of National Education and Professional Development, Haiti (Ministère de l'Éducation Nationale et de la Formation Professionnelle)
MOH	Ministry of Health
MSPP	Ministry of Public Health and Population, Haiti (Ministère de la Santé Publique et de la Population)
NGO	Non-governmental organization
NID	Neglected Infectious Diseases
NTD	Neglected Tropical Diseases
OREPAS	Regional water and sanitation offices, Haiti (Offices régionaux d'eau potable et d'assainissement)
PAHO	Pan American Health Organization
PCU	Project Coordinating Unit
PNEFL	National Program for the Elimination of Lymphatic Filariasis, Haiti (Programme National D'élimination de la Filariose Lymphatique)
PPP	Public-Private Partnership
RMA	Recife Metropolitan Area
SAFE	Surgery, Antibiotics, Facial Cleanliness, Environmental Change
SRAM	Systemic Rapid Assessment and Monitoring
STH	Soil-Transmitted Helminth
TAS	Transmission Assessment Survey
TB	Tuberculosis
UND	University of Notre Dame
UNICEF	The United Nations Children's Fund
USAID	United States Agency for International Development
WHO	World Health Organization

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# Executive Summary

The Latin American and Caribbean (LAC) region has experienced dramatic gains in health and life expectancy in the past century.<sup>1</sup> Yet hundreds of millions of people in the region are still at risk of contracting at least one Neglected Tropical Disease (NTD), a class of diseases that cause chronic suffering and disabilities, impede physical and social development, and result in stigmatization of people living in poverty. Unfortunately, many existing programs designed to combat NTDs are underfunded, do not collaborate with each other, and are not integrated with the general health system and other sectors vital for addressing risk factors.

This book analyzes the efforts made by the Neglected Tropical Disease Initiative in Latin America and the Caribbean (LAC NTD Initiative) to control or eliminate these dreadful diseases through *integrated* NTD programs that address multiple diseases by combining interventions from health, water and sanitation, education, and other sectors in a unified, coordinated way. It shares the LAC NTD Initiative's experiences advocating for the financing, design, and implementation of integrated programs to combat the diseases, and it highlights several important lessons learned and challenges confronted throughout the process.

Unlike previous works, this book employs a single conceptual framework to compare

and contrast the integration of projects implemented in different contexts. The experiences, case studies, and analyses presented here offer ideas and best practices for building partnerships for promoting NTD control, and for integrating the management structures, financing arrangements, implementation, and monitoring and evaluation activities of NTD projects and programs. Accordingly, the LAC NTD Initiative believes that this book is a valuable resource for donors, advocates, policy makers and program managers who are working to control and eliminate NTDs in LAC and around the world.

## What are NTDs?

NTDs are diseases that afflict poor and marginalized populations despite having been prevented or cured relatively easily in other areas (Broadbent 2011). The Pan American Health Organization (PAHO) is focusing its efforts on the elimination and control of 12 neglected diseases in LAC, including leprosy, lymphatic filariasis (LF), onchocerciasis, trachoma, schistosomiasis, soil-transmitted helminthiasis (STH), Chagas disease, and human rabies. The lack of clean water, inadequate sanitation and housing, and insufficient access to quality health care are risk factors for many of these diseases. Generally poor populations in LAC suffer from multiple NTDs simultaneously.

## The case for a new effort for combating NTDs in LAC

The LAC region has not been prioritized by global funding organizations and partnerships for NTD control and elimination despite the fact that more than 100 million people in the region are infected by at least one of these diseases (Hotez et al. 2008). While some NTDs are widespread throughout LAC, many of the more severe diseases are concentrated in small areas, or “hot spots,” where focused efforts to address multiple diseases could substantially reduce the region’s NTD burden for a very low cost relative to other public health interventions. Studies estimate that LF, onchocerciasis, and trachoma could be eliminated, and STH and schistosomiasis controlled in LAC by 2020 for a total cost of US\$171.8 million and less than US\$0.51 per person in most countries (Haiti and Guyana are notable exceptions) (Bitran et al. 2009). Chagas and leishmaniasis could be eliminated in 10 years for an estimated US\$66 and US\$208 per household,<sup>2</sup> respectively, and leprosy eliminated from some areas in 11 years for US\$1900 per case<sup>3</sup> (Bitran and Associates 2013).

## The Neglected Tropical Disease Initiative in Latin America and the Caribbean

In 2008, with the support of the Bill & Melinda Gates Foundation, the Inter-American Development Bank (IDB) partnered with the Global Network for Neglected Tropical Diseases of the Sabin Vaccine Institute and the Pan American Health Organization (PAHO) to create the LAC NTD Initiative. The initiative sought to:

- Develop a regional trust fund to support national and local governments and non-governmental organizations (NGOs) to scale-up efforts to control and eliminate NTDs.
- Launch demonstration projects in

various countries throughout the region to explore the feasibility of implementing integrated approaches to reducing the burden of NTDs.

## The initiative faced a number of challenges in attracting donors to contribute to a regional NTD fund, including:

- There is no universal list or definition of NTDs and the burden of disease varies radically among and within LAC countries.
- NTDs primarily affect poor and isolated communities, making their effects less visible to potential donors.
- The two main bilateral funders for NTD control, the US and UK governments, have chosen to focus their health assistance on Africa and Asia, where the NTD burden is more widespread and there are fewer local resources available than in LAC.
- Potential donors often prioritize specific countries or diseases and thus consider a regional fund for integrated programs too broad to support.
- Non-traditional funders prefer not to work with governments, but governments are often best suited to sustain and scale up NTD programs.

The LAC NTD Initiative was unable to overcome the challenges to establishing the regional fund and thus recruited partners to support projects in five countries that would demonstrate the feasibility of implementing integrated approaches for controlling and eliminating NTDs. The Sabin Vaccine Institute and the Global Network for NTDS, through the Bill & Melinda Gates Foundation’s grant, provided US\$2.5 million, and the LAC NTD Initiative mobilized resources from private corporations and foundations such as PepsiCo Foundation, *FEMSA Foundation*, and *Cinépolis Foundation*. *The LAC NTD Initiative also leveraged funding*

<sup>2</sup> Assuming a Chagas household infestation rate of 47.7 percent and incidence of 117 in the base year, and leishmaniasis incidence of 849 in the base year.

<sup>3</sup> Assuming an average of 127 new cases per year at the start of the intervention.

from Latin American governments and IDB health and water and sanitation loans to finance the demonstration projects.

### **What are integrated programs?**

Integrated programs can be especially cost-effective for addressing NTD hot spots because they allow many diseases and their risk factors to be addressed simultaneously by a single program. There are three types of integrated NTD programs:

- Programs that combine interventions for various diseases to avoid duplication of activities, such as when the drugs to treat both STH and LF are distributed to at-risk communities during a same campaign.
- Programs that combine NTD interventions with other public health programs to achieve a common goal, such as providing deworming medication and nutritional supplements to reduce child malnutrition.
- Programs that collaborate with other sectors to address risk factors, such as when water and sanitation improvement projects and drug distribution projects are combined to produce a more sustainable impact.

### **Case studies: Demonstration projects in Brazil, Guyana, Haiti, and Mexico**

This book analyzes the management, financing, implementation, and monitoring and evaluation of four of the demonstration projects.

#### **Brazil**

The project supported the prevention and control of STH and schistosomiasis and the detection of leprosy cases in students using self-image cards. Additionally, it contributed to the evaluation of the LF prevalence and provided health education for students and their parents in three municipalities of the Recife Metropolitan Area. About 86,000 people benefited from the project. It observed an 18.5, 77.3, and 35 percentage point reduction in the prevalence of STH from the baseline in the three municipalities

(Jaboatão dos Guararapes, Olinda, and Recife respectively). Furthermore, the leprosy cure rate was 6.5 to 38 percentage points higher during the project than for cases detected through the primary health system in the year before the project was implemented.

#### **Guyana**

The project included a joint community-based deworming campaign for LF and STH in the capital of Georgetown and surrounding areas, in addition to a social mobilization campaign to educate the population, infrastructure improvements to Georgetown's sewage system to reduce risk factors, and institutional strengthening of the country's water and sanitation utility, Georgetown Water Inc. It was financed by adding a deworming component onto an existing IDB water and sanitation loan.

#### **Haiti**

The LAC NTD Initiative supported five separate projects that included a community-based deworming campaign for LF and STH and water and sanitation improvements in the capital of Port-au-Prince, as well as deworming campaigns for STH and investments in water and sanitation infrastructure in a number of medium-size cities throughout the country and small villages in Artibonite province. The initiative also supported nationwide "Child Health Weeks," which provided deworming medication along with nutritional supplements, oral rehydration salts, "catch-up" vaccines for children, and breastfeeding promotion materials for mothers. The prevalence of STH in Haiti decreased from 34 percent in 2002 to 19 percent in 2013.

#### **Mexico**

The project used inter-programmatic mobile teams to conduct an integrated baseline survey for five NTDs (trachoma, STH, Chagas disease, human rabies, and leishmaniasis) in a number of rural indigenous communities in the state of Chiapas. While conducting the survey, the teams also sprayed for insect

vectors, vaccinated dogs and cats for rabies, distributed pills to treat STH, and treated active cases of trachoma. The project also supported educational activities in local schools and community centers that used film screenings, games, and puppet shows to teach children about NTD transmission and prevention.

## **Improving integration: Lessons learned and challenges encountered**

### **Lessons learned**

#### **1. Involvement and “buy-in” from all major stakeholders from inception of the project are essential to smooth implementation of integrated NTD projects.**

Challenges faced by integrated NTD projects will have the greatest chance of being overcome if each stakeholder has a sense of ownership of the project. The Recife project engaged all stakeholders from the early stages by establishing a “management committee” that included representatives from the nonprofit implementing institution, government officials from each municipality, municipal disease specialists for each of the target NTDs, and the IDB, and by inviting education specialists to participate in the planning of the education component of the project. The Guyana project, in contrast, was slowed because it did not involve several key stakeholders during the first year of its deworming campaign. Implementation of the project improved substantially after the project included other relevant government and community entities.

#### **2. Multi-stakeholder committees, designated coordinators, and leading institutions appear to be the most effective structures for ensuring successful collaboration between multiple public sector partners working on integrated NTD projects.**

Integrated programs require collaboration among sectors that are not accustomed to working together. The LAC NTD Initiative promoted strong communication at the

regional level. In Recife, a management committee was able to hold each of the participating municipalities accountable for their obligations. A project coordinator was hired in Guyana to improve communication and a committee is being established to better manage the relationship between the two main public sector partners. Finally, the Chiapas project was led by the state health authority and used coordinators to ensure collaboration with private sector partners and local community leaders.

#### **3. A well-executed and effective social mobilization campaign is fundamental for the success of deworming campaigns.**

Deworming campaigns cannot reach the entire population unless residents know when drug distributors will visit their houses or schools, understand that the pills they are being given are for treating parasitic worms, and trust that the pills will not harm them. All four LAC demonstration projects used some combination of school visits, banners, educational videos, television and radio ads, community and civic organizations, and town hall meetings to inform the population about deworming campaigns. The ineffectiveness of Guyana’s social mobilization campaign in the first year resulted in fewer people agreeing to take the medication, although this issue was addressed in the second year. Social mobilization campaigns can also be used to teach the population how to keep from being re-infected by adopting more hygienic behaviors, thus increasing the efficacy of deworming.

#### **4. Some aspects of NTD projects can and should be integrated, while others should be implemented separately:**

- Drug distribution for STH and LF can be implemented together relatively easily.
- Interventions for some diseases cannot be implemented together because they do not occur in the same geographical area, have different risk factors, or need to be addressed using different control strategies.

- The greatest opportunities for integrating water and sanitation and NTD activities are through joint education campaigns and monitoring and evaluation surveys, and targeting water and sanitation projects to areas with high NTD burden.
- Monitoring and evaluation activities can be combined for multiple diseases through joint surveys and collection of samples, and integrated with treatment and education interventions by simultaneously distributing medication and information while collecting data.

**5. NTD advocates can take advantage of water and sanitation and other high-profile projects to garner support and funding for NTD-specific activities.**

The demonstration projects in Guyana and Haiti added deworming and social mobilization components to water and sanitation projects. Although coordinating across sectors can be challenging and, in many cases, requires additional bureaucratic procedures, linking NTD activities with water and sanitation investments proved highly effective for attracting additional funding for deworming while also addressing NTD risk factors.

**Challenges**

**1. Low internal capacity and complex bureaucratic procedures complicate the planning and implementation of integrated NTD projects.**

The intersectoral and multi-disciplinary nature of integrated NTD projects makes them especially vulnerable to weak capacity, poor communication, and mismanagement within or among government entities. NTD projects should invest heavily in capacity-building, should consider innovative management arrangements to reduce bureaucracy, and should carefully design

mechanisms to facilitate communication among partners.

**2. It is difficult to foster coordination between the health and the water and sanitation sectors.**

These two sectors have traditionally worked in isolation of each other and thus often have limited knowledge of each other's expertise and do not share the same objectives, performance indicators, or technical language. Furthermore, many public institutions in low-income countries do not have external relations divisions tasked with managing partnerships. Well-designed management structures such as joint committees can improve collaboration, but in some cases it may be more effective for the two sectors to collectively decide to implement projects where NTD prevalence is high but manage the implementation of corresponding activities separately.

**3. Despite successful programs and obvious benefits, it is still difficult to make integrated NTD programs a top priority.**

The lack of a universal definition of NTDs and the fact that they almost exclusively affect the poorest and most marginalized populations mean that the suffering caused by NTDs is still largely invisible to donors and policy makers. Furthermore, many water and sanitation and education specialists do not understand the relationship between their fields and NTDs, a situation that is exacerbated by the lack of empirical evidence linking the sectors. More research is needed to establish an evidence base for the effectiveness of intersectoral interventions, and more advocacy is needed to promote integrated NTD control and elimination programs.





# Introduction

Jonathan Cali, Maria Fernanda Garcia, Ignez Tristao

In Latin America and the Caribbean, more than 500 million people are at risk of being infected by one or more Neglected Tropical Diseases (NTDs), sometimes referred to as Neglected Infectious Diseases (NIDs), and more than 100 million people currently suffer from at least one of these debilitating illnesses (Hotez et al. 2008). NTDs are a biologically diverse set of conditions<sup>1</sup> that primarily affect poor and marginalized populations. Multiple NTDs are often concentrated in specific “hot spots” where residents lack access to proper water and sanitation and regular health services, and are exposed to disease vectors such as mosquitoes (PAHO 2011).

The fact that NTDs such as leprosy, lymphatic filariasis, and intestinal worms continue to ravage millions of people in Latin America and the Caribbean (LAC) despite major advances in health care in the region has inspired a new push to control or eliminate these diseases. Recognizing that many people are simultaneously affected by several NTDs, and that NTDs are typically caused by the same risk factors, experts are now promoting integrated approaches to reducing their burden. Integrated NTD programs can save on overhead costs by addressing several diseases at once, and they can be combined with other health initiatives to leverage synergies and achieve multiple outcomes. For example, programs that supply nutritional supplements to children and pregnant women and, at the same time, provide deworming medicine may be able to reduce

malnutrition more efficiently and effectively (Global Network for Neglected Tropical Diseases 2011). Finally, NTD programs can be integrated with initiatives from other sectors, such as water and sanitation or education, in order to simultaneously reduce risk factors and diagnose and treat those who are already infected.

In 2008, with the support of the Bill & Melinda Gates Foundation, the Inter-American Development Bank (IDB) partnered with the Global Network for Neglected Tropical Diseases of the Sabin Vaccine Institute and the Pan American Health Organization (PAHO) to create the Neglected Tropical Disease Initiative in Latin America and the Caribbean (henceforth referred to as the LAC NTD Initiative). The initiative sought to:

- Develop a regional trust fund to support national and local governments and non-governmental organizations (NGOs) to scale up efforts to control and eliminate NTDs. The LAC NTD Initiative also spearheaded an advocacy campaign to increase the priority of NTDs on the agendas of regional governments and to solicit contributions for the trust fund from foundations, private companies, aid agencies, and other donors.
- Launch demonstration projects in countries throughout the region to explore the effectiveness of an integrated approach to reducing the burden of NTDs.

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<sup>1</sup> WHO (2014) lists 17 NTDs, while PAHO (2014) focuses on 12 NIDs.

Building on the existing literature, this book details the LAC NTD Initiative's experiences and challenges in attempting to form a regional partnership and trust fund for controlling and eliminating NTDs. It provides detailed case studies of integrated NTD programs and highlights the challenges encountered and lessons learned from implementing demonstration projects in Brazil, Mexico, Guyana, and Haiti by examining the four principal components (management, financing, implementation, and monitoring and evaluation) of each project. Unlike previous works, this book employs a single conceptual framework to compare and contrast the integration of the four projects implemented in different contexts. It offers concrete, practical lessons that will be useful to managers, policy makers, donors, and advocates interested in pursuing an integrated approach to controlling and eliminating NTDs.

**This book finds that despite the challenges associated with carrying out integrated NTD programs, they are nonetheless essential to an efficient and effective strategy for controlling and eliminating NTDs in Latin America and the Caribbean.** Based on the experiences of the LAC NTD Initiative's activities, policy makers, program managers, advocates, and donors should take note of the following lessons:

1. Involvement and “buy-in” from all major stakeholders from the earliest stages of integrated NTD projects are critical to their smooth implementation.
2. There are various models for fostering strong communication, but multi-stakeholder committees, designated coordinators, and leading institutions appear to be the most effective for coordinating between multiple public sector partners.
3. A well-executed and effective social mobilization campaign is fundamental to the success of mass drug administration (MDA).
4. Certain aspects of NTD programs can be easily integrated, while others

cannot be integrated due to the lack of geographical overlap or the nature of the target diseases.

5. NTD advocates can take advantage of water and sanitation projects and other high-profile development initiatives to garner support and funding for NTD-specific activities.

Managers and policy makers should prepare to encounter the following challenges when implementing integrated NTD programs:

1. Low internal capacity and complex bureaucratic procedures can complicate joint planning and implementation.
2. It is difficult to foster good communication and coordination between the water and sanitation sector and the health sector.
3. Despite their obvious benefits, it is still difficult to make integrated NTD programs a top priority for policy makers, donors, and other stakeholders.

**This book is structured as follows:**

The remainder of this introductory chapter provides background information on NTDs in the LAC region, presents the case for increasing investment in NTD interventions, details the LAC NTD Initiative's partnership model and attempt to create a regional trust fund, and reviews the existing literature on integrated NTD interventions. The next chapter explains the LAC NTD Initiative's understanding of “integration” and this book's conceptual framework and methodology for analyzing the four demonstration projects. The following four chapters present analyses of the demonstration projects in Recife, Brazil; Georgetown, Guyana; Chiapas, Mexico; and in several municipalities in Haiti. The final chapter compares and contrasts the four case studies and offers important lessons for NTD program managers, policy makers, donors, and advocates. Additionally, it highlights the continuing challenges for mobilizing support and resources for NTD interventions and successfully implementing an integrated model of NTD control and elimination.

## A New Push to Address NTDs in Latin America and the Caribbean: Why Now?

### Building on Global Momentum

Recognizing that NTDs still inflict a heavy burden on many impoverished communities, the World Health Assembly adopted 14 resolutions between 1997 and 2004 setting targets for NTD control or elimination (WHO 2010). Donor organizations responded positively to these resolutions, as grant money allocated to NTD control increased from US\$99 million in the period from 1996 to 1999 to US\$676 million in the period from 2000 to 2003 (Shiffman 2006). Shortly after the formation of the LAC NTD Initiative in 2008, PAHO passed a resolution (CD49.R19) urging its member states to commit themselves and more resources to control and eliminate NTDs by the end of 2015. NTD advocacy reached its peak in January 2012 with the London Declaration, where international donors and private sector organizations pledged hundreds of millions of dollars to support elimination and control programs in the developing world.<sup>2</sup> In 2013, the Organization of American States (OAS) endorsed PAHO Resolution CD49.R19, reiterating its member countries' commitment to take action to eliminate or reduce the impact of 12 neglected infectious diseases by the end of 2015 (OAS 2013).

### The Heavy Disease Burden of NTDs in LAC

Globally, NTDs inflict a burden of 56.6 million Disability-Adjusted Life Years (DALYs), more than either malaria or tuberculosis (TB) (Hotez et al. 2006). They affect people who are impoverished and politically marginalized, further exacerbating poverty and causing social stigmatization.

Many NTDs cause severe disabilities and thereby reduce the economic productivity of individuals and communities. In addition, NTDs can cause other serious ailments such as physical and mental retardation in children, severe anemia, organ damage, blindness and increased risk of poor birth outcomes and maternal morbidity. There is overwhelming evidence that a reduction in the incidence of parasitic infections not only improves children's health (by reducing diarrhea and anemia) but also significantly increases cognitive development, school participation, and future economic welfare (Cattaneo et al. 2009; Miguel and Kremer 2004). NTDs rarely spread to high-income countries, and therefore are neglected by international stakeholders despite the fact that many can easily be prevented or cured using existing tools (WHO 2010).

In Latin America, soil-transmitted helminth infections (STH) such as trichuriasis, ascariasis, and hookworm are the most prevalent NTDs. They inflict a heavy burden throughout the region, causing anemia and stunting in children. Schistosomiasis is still prevalent in Brazil, Saint Lucia, Suriname, and Venezuela, and lymphatic filariasis (LF) is still actively transmitted in Haiti, Brazil, Guyana, and the Dominican Republic. With 50,000 new cases reported every year, Chagas disease inflicts one of the largest disease burdens in the LAC region, including in the Gran Chaco region of Argentina, Paraguay, and Bolivia, in Chiapas, Mexico, in Brazil, and in Colombia, where the disease has re-emerged (Hotez et al. 2008). Trachoma infects about one million people, mostly in Brazil and Guatemala. Another 65,000 people in the region were being treated for leprosy in 2006, with the majority also in Brazil (Hotez et al. 2008). NTDs in LAC primarily affect those living in crowded, peri-urban slums and isolated rural areas that lack access to primary health care and adequate water and sanitation. Various diseases are often present in the

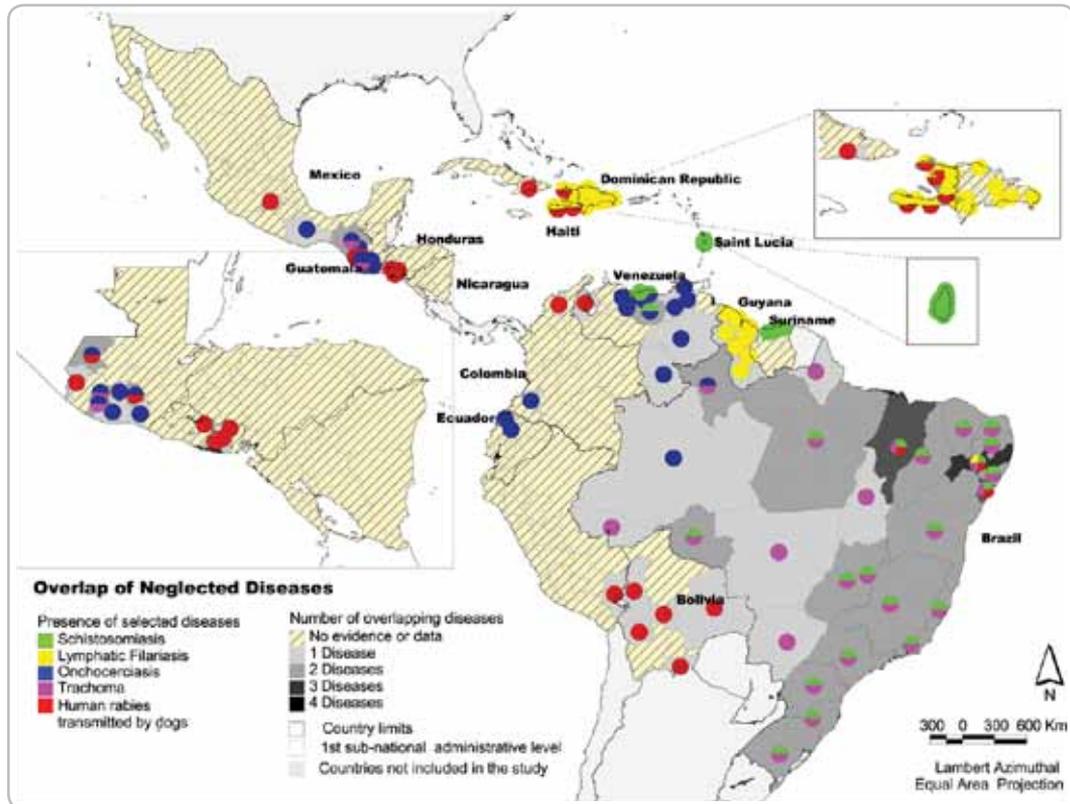
<sup>2</sup> "Private and Public Partners Unite to Combat 10 Neglected Tropical Diseases by 2020," Press Release, Bill & Melinda Gates Foundation, January 30 2012, <http://www.gatesfoundation.org/media-center/press-releases/2012/01/private-and-public-partners-unite-to-combat-10-neglected-tropical-diseases-by-2020>.

Table 1 • NTDs in LAC by Prevalence and Distribution

Disease	Population Currently Infected in LAC	Population At Risk in LAC	Major Vulnerable Populations or Geographic Areas	Number LAC Countries Infected	Percentage of LAC Population Infected (% Poor People Infected)	Percent Global Disease Burden in LAC
Trichuriasis	100 million	523 million	Poor rural & urban slums	27	17.8% (46.9%)	16.6%
Ascariasis	84 million	514 million	Poor rural & urban slums	27	15.0% (39.4%)	10.4%
Hookworm	50 million	346 million	Poor rural	26	8.9% (23.5%)	8.7%
Chagas disease	8-9 million	25-90 million	Poor rural & urban slums	13	1.6% (4.1%)	99.8%
Schistosomiasis	1.8 million	36 million	Poor rural	4 with > 1,000 cases	0.3% (0.8%)	0.9%
Blinding trachoma	1.1 million	ND	Poor rural	3	0.2% (0.5%)	1.3%
Lymphatic filariasis	720,000	8.9 million	Urban slums & poor rural	7	0.1% (0.3%)	0.6%
Dengue	552,141 reported in 2006	ND	Urban slums	23	0.1% (0.2%)	ND
Cysticercosis	400,000	75 million	Poor rural	15	<0.1% (0.2%)	ND
Cutaneous (CL) and visceral (VL) leishmaniasis	62,000 CL 5,000 VL	ND	Urban slums & poor rural	18	ND	ND
Leprosy	47,612 new cases	ND	Poor rural & urban slums	22	<0.1% (0.1%)	11.4%
Onchocerciasis	64 new cases in 2004	515,675	Poor rural	6	<0.1% (0.1%)	0.3%
Jungle yellow fever	86 new cases in 2004	ND	Jungle & urban slums	4	<0.1% (0.1%)	<0.1%

Source: Reproduced from Hotez et al. (2008)

Figure 1 • Overlapping NTDs in LAC



Source: (Schneider et al. 2011)

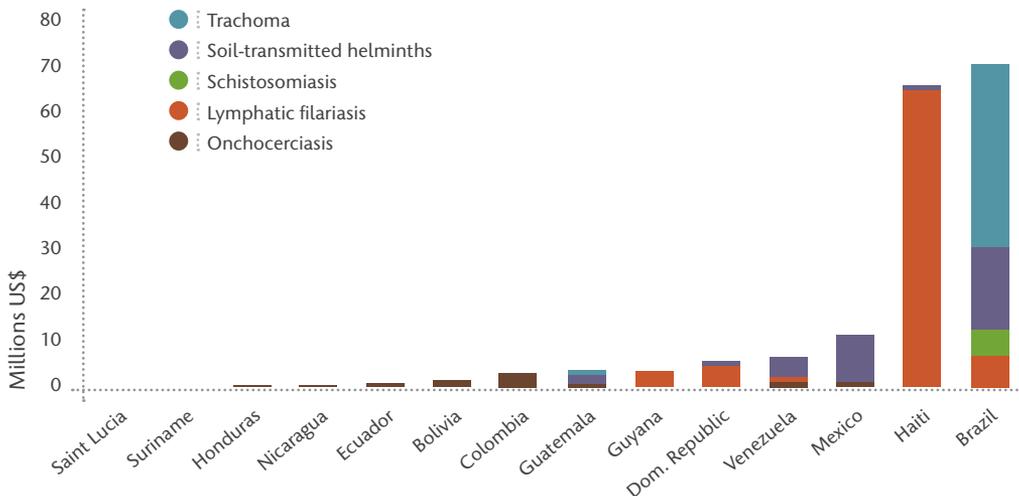
same geographical area, and they tend to have a disproportionately high impact on indigenous populations and people of African descent (Hotez et al. 2008).

### Value for Money: Modest Costs for Control and Elimination

Preventive chemotherapy to combat the five most prevalent NTDs is among the most cost-effective global health interventions in terms of cost per DALY averted. It has been estimated that the economic rates of return on controlling NTDs are between 15 and 30 percent (Hotez 2008). Estimates for LAC suggest that LF, onchocerciasis, and trachoma could be eliminated and STH and schistosomiasis controlled by 2020 for a total cost of US\$171.8 million (Bitran et al. 2009). The price tag for most countries, excluding Haiti and Guyana,<sup>3</sup> would not exceed US\$0.51 per person or 1 percent of national public health expenditure. Brazil, where all five of these NTDs are present, would require the largest investment of around US\$70 million, followed by Haiti at about US\$67

million and Mexico at around US\$12 million (Bitran et al. 2009). A separate report found that a program to eliminate Chagas disease from Arequipo, Peru<sup>4</sup> would cost US\$20 million over 10 years (US\$66 per household) and a program to eliminate leishmaniasis from Cusco, Peru<sup>5</sup> would cost US\$20.6 million over the same time period (US\$208 per household) (Bitran and Associates 2013). Spraying for insect vectors would constitute 75 to 80 percent of the cost for both of these programs, which would decrease substantially after the first year (Bitran and Associates 2013). Eliminating leprosy from Foz do Iguaçu, Brazil would cost about US\$300,000 (US\$1,900 per case) over 11 years and treatment of the disease would account for about half the cost<sup>6</sup> (Bitran and Associates 2013). As a comparison, AIDS treatment in Brazil cost US\$2,577 per person, for a total of US\$414 million, in 2005 (Nunn et al. 2009). Globally, the median cost of protecting one person from malaria for a year with insecticide-treated bed nets costs US\$2.20, which, although considered a bargain, is still significantly more than the

Figure 2 • Costs of Control/Elimination of Selected NTDs in LAC, by Country and by Disease



Source: Adapted from Bitran et al. (2009), exhibit 4

<sup>3</sup> Guyana- US\$4.13 per capita and 8.3 percent of health expenditure; Haiti- US\$6.76 per capita and 48.3 percent of health expenditure (Bitran et al. 2009).

<sup>4</sup> Assuming a Chagas household infestation rate of 47.7 percent and incidence of 117 in the base year.

<sup>5</sup> Assuming a leishmaniasis incidence of 849 in the base year.

<sup>6</sup> Assuming an average of 127 new cases per year at the start of the intervention.

cost of eliminating LF, onchocerciasis, and trachoma from LAC and controlling STH (White et al. 2011). These figures suggest that the suffering and economic harm inflicted upon the poor communities of LAC by NTDs could be brought to an end with modest investments in NTD control and elimination programs.

### **The LAC NTD Initiative: A Regional Partnership**

The increased global attention, the high burden inflicted on the LAC population by NTDs, and the relatively low cost required to address these diseases motivated the Global Network for Neglected Tropical Diseases of the Sabin Vaccine Institute, PAHO and the IDB to create the LAC NTD Initiative in 2008. This partnership is composed of an NGO, a multilateral development bank, and a regional health organization, with each complementing the resources and expertise of the others. An analysis by the Center for Global Development highlights the following characteristics of partnership initiatives that have contributed to positive health outcomes in the past (Levine and Kinder 2004; cited in Shah and Matthews 2006):

- Strong global, regional and local political leadership
- Collaborative efforts between governments, donors and NGOs in program design and implementation
- Ongoing and predictable funding from donors and national governments, even after goal is achieved
- Implementation of proven cost-effective interventions
- Programmatic approaches to support health system infrastructure
- Participation of households and the community in designing, executing, and monitoring activities

Building on these recommendations and the experiences of other global health partnerships, the LAC NTD Initiative proposed to establish a regional fund to channel financial resources from public and private sector partners to support collaborative efforts to implement proven,

cost-effective interventions. It planned to integrate NTD control initiatives with programs from other sectors in order to leverage those efforts and contribute to a sustainable reduction of the burden of NTDs.

The partnership's structure is guided by what Patscheke et al. (2014) call "the five conditions of success of collective impact." The partnership encouraged strategic coherence around a *common agenda*, created *shared measurement* and knowledge sharing systems, ensured that activities of the various partners were coordinated and *mutually reinforcing*, and facilitated continuous and open *communication*. Each core partner brought a particular strength to the effort. The Global Network/Sabin provided its global advocacy expertise and initial funding, PAHO provided its technical capacity and experience entering into dialogue with national health authorities, and the IDB provided its experience with the implementation of large-scale projects in several sectors, including the water and sanitation, education, and health sectors.

The *common agenda* of the partnership was shaped by several resolutions and publications released by PAHO in 2009. In Resolution CD49-R.19, the health ministers of LAC pledged to eliminate or reduce neglected diseases and other poverty-related infections for which tools exist, to levels such that they would no longer be considered a public health problem by 2015. PAHO also published "Epidemiological Profiles of Neglected Diseases and Other Infections Related to Poverty in Latin America and the Caribbean," which mapped out "hot spots of disease overlap" (PAHO 2009). It was accompanied by another publication, "Control and Elimination of Five Neglected Diseases in LAC, 2010-2015," which serves as a tool for health authorities to assist them in planning their strategy to meet the goals of Resolution CD49-R.19 (Ault et al. 2010). As a regional initiative, the LAC NTD Initiative aimed to complement the advocacy and funding efforts carried out by other partners at the global level, including those that committed to NTD control and elimination in the London Declaration of 2012.

Table 2 • Overview of LAC NTD Initiative Partnership Structure

	Global	Regional	Local
<b>Common agenda</b>	<ul style="list-style-type: none"> <li>❖ NTDs growing as a global priority</li> <li>❖ Problem: LAC is not prioritized in Global NTD efforts</li> </ul>	<ul style="list-style-type: none"> <li>❖ Prioritize countries / “hotspots” for interventions</li> </ul>	<ul style="list-style-type: none"> <li>❖ Support for developing local strategies and activities</li> <li>❖ Align plans/ activities</li> </ul>
<b>Shared Measurement</b>	<ul style="list-style-type: none"> <li>❖ Standardized indicators had not been finalized when partnership began</li> </ul>	<ul style="list-style-type: none"> <li>❖ Facilitate learning across countries</li> <li>❖ Provide technical assistance to countries/ local partners</li> <li>❖ Working group established to create common M&amp;E guidelines</li> </ul>	<ul style="list-style-type: none"> <li>❖ Strong M&amp;E, basic evaluations when feasible</li> <li>❖ Local governance to facilitate information</li> <li>❖ M&amp;E support provided</li> </ul>
<b>Mutually reinforcing activities</b>	<ul style="list-style-type: none"> <li>❖ Costing studies, M&amp;E developed in partnership and case-studies shared as input to global efforts</li> </ul>	<ul style="list-style-type: none"> <li>❖ Support implementation through technical assistance</li> <li>❖ Raise funds for specific projects</li> </ul>	<ul style="list-style-type: none"> <li>❖ Mobilize additional partners at local level</li> <li>❖ Coordinate varied activities according to project and local conditions</li> <li>❖ Funds raised at local/ project level</li> </ul>
<b>Communication</b>	<ul style="list-style-type: none"> <li>❖ Communication and knowledge sharing with other partners</li> </ul>	<ul style="list-style-type: none"> <li>❖ Coordination and communication between partners</li> <li>❖ Advocate for policy change among LAC governments</li> <li>❖ Efforts to communicate sense of urgency to potential partners</li> </ul>	<ul style="list-style-type: none"> <li>❖ Communication among implementing/ core partners encouraged and maintained</li> <li>❖ External communication through social media and other electronic media</li> </ul>

Source: Adapted from Patscheke et al. (2014).

### Regional Fund: Creating a Financial Vehicle

As a way to support *mutually reinforcing activities*, the LAC NTD Initiative proposed the creation of a Multi-donor Trust Fund to pool resources from multiple partners into one account to finance integrated NTD control and elimination activities. The IDB would provide partners with technical and fiduciary oversight of projects in addition to monitoring, supervision, execution, and evaluation services. The IDB also offered a platform for transparent and competitive procurement and strict social and environmental compliance standards. PAHO would assist countries with technical

advice in preparing their national NTD plans. The Global Network/ Sabin, in turn, would lead advocacy and resource mobilization efforts. As part of the preparatory activities for establishing such a mechanism, the partners formed a working group to create common M&E guidelines as a critical input for achieving *shared measurement*.

The LAC NTD Initiative encountered several challenges to setting up the trust fund, including:

- **Variations in what is regarded as a priority NTD.** The list of priority NTDs varies by stakeholder, region and country. For example, the World

Health Organization (WHO)'s list of NTDs includes 17 diseases,<sup>7</sup> while PAHO Resolution CD49-R.19 names 12 “neglected infectious diseases”<sup>8</sup> and the United States Agency for International Development (USAID) NTD program identifies five target diseases.<sup>9</sup> Regional advocacy for NTDs must compete with many other global health priorities that are clearly defined and universally recognized. The lack of agreement on what qualifies as an NTD complicates advocacy efforts. Furthermore, the geographical and socio-economic diversity in the LAC region means that the NTD burden varies radically from country to country and even within countries. This made it challenging to advocate for a pooled funding mechanism because regional efforts to raise awareness for NTDs are often detached from local realities.

- **NTDs affect primarily isolated and poor communities.** While NTDs can be addressed in multiple ways and have important health and educational consequences, the fact that they affect mainly isolated and poor communities makes it more difficult to engage non-traditional partners, especially corporate partners based in the capital cities of the region. The suffering caused by NTDs is often less evident than that from other competing and more visible issues.

- **The LAC region is low on the priority of global efforts.** NTD treatment programs globally rely heavily on funding from two bilateral donors—the United States and the United Kingdom—neither of which have prioritized LAC for health assistance. This is mainly due to the fact that many of the endemic countries in the LAC region are thought to have the ability to fund their own NTD programs. More than 70 percent of the global NTD burden

exists in middle-income countries, such as Brazil and Mexico (Dalberg Global Development Advisors 2013).

- **Potential partners are interested in specific locations and diseases.**

Foundations, high net-worth individuals, bilateral donors, and private sector companies often have country-specific and disease-specific priorities. In many cases, they will support only those programs that are targeted toward specific diseases in certain countries or regions within countries. Thus partner interests rather than actual need can drive global health programming.

- **Potential private funders prefer not to work with governments as implementing partners.** It is easier to engage non-traditional funding partners when governments are not implementing the activities, as governments are perceived to be less malleable than NGOs and other implementing organizations when it comes to partner priorities and needs. Yet the reality is that projects are more likely to be sustainable, and there are more opportunities for capacity building, when local or national governments serve as implementing partners.

### Partnership Expressed through Demonstration Projects

The LAC NTD Initiative determined that the challenges to developing a regional trust fund for mobilizing resources to combat NTDs in LAC were too great to overcome. Instead, the initiative decided to recruit partners to support key projects in the region that would demonstrate the benefit of implementing integrated NTD programs. The LAC NTD Initiative has supported demonstration projects in five countries, including Mexico, Brazil, Guyana, Haiti, and Guatemala. The initiative is planning to

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<sup>7</sup>“The 17 neglected tropical diseases,” World Health Organization, [http://www.who.int/neglected\\_diseases/diseases/en/](http://www.who.int/neglected_diseases/diseases/en/).

<sup>8</sup>“Neglected Infectious Diseases Integrated Approach,” Pan American Health Organization, [http://www.paho.org/hq/index.php?option=com\\_content&view=article&id=5753&Itemid=4141&lang=en](http://www.paho.org/hq/index.php?option=com_content&view=article&id=5753&Itemid=4141&lang=en).

<sup>9</sup>“Targeted Diseases,” USAID’s NTD Program, [http://www.neglecteddiseases.gov/target\\_diseases/index.html](http://www.neglecteddiseases.gov/target_diseases/index.html).

Table 3 • Funding for LAC NTD Initiative Demonstration Projects

Number of countries w/projects	5 countries
Initial grant	US\$ 2.5 million
Additional grant resources mobilized	US\$ 8.8 million
Additional loan resources leveraged	US\$ 407 million

implement projects in two more countries in 2014—Argentina and Honduras. The Sabin Vaccine Institute and the Global Network, through a grant from the Bill & Melinda Gates Foundation, provided US\$2.5 million for the initial projects in Mexico and Brazil. The initiative later mobilized an additional US\$8.8 million in grants from other sources, including financing from the Mesoamerica Health Initiative 2015

for deworming activities and from other private sector partners such as PepsiCo Foundation, FEMSA Foundation, Cinépolis Foundation, and the University of Notre Dame. Furthermore, the LAC NTD Initiative leveraged IDB loans in health and water and sanitation worth US\$407 million, the majority of which was invested in water and sanitation infrastructure upgrades (IDB 2012a). Additionally, the initiative organized

Table 4 • LAC NTD Initiative Partners, by Demonstration Project

	Chiapas, Mexico	Recife, Brazil	Haiti	Guyana
<b>Government</b>	<ul style="list-style-type: none"> <li>Chiapas State Health Institute (ISECH)</li> </ul>	<ul style="list-style-type: none"> <li>Municipal governments of Recife, Jaboatão dos Guararapes, and Olinda</li> <li>Government of Brazil</li> </ul>	<ul style="list-style-type: none"> <li>Government of Haiti</li> <li>US Centers for Disease Control</li> <li>USAID</li> </ul>	<ul style="list-style-type: none"> <li>Government of Guyana</li> <li>Georgetown Public Hospital</li> <li>Georgetown Municipality</li> <li>Department of Foreign Affairs, Trade and Development Canada (DFATD)</li> </ul>
<b>NGO/ Private nonprofit</b>	<ul style="list-style-type: none"> <li>Sabin/Global Network</li> </ul>	<ul style="list-style-type: none"> <li>Instituto de Medicina Integral Professor Fernando Figueira (IMIP)</li> <li>Sabin/Global Network</li> </ul>	<ul style="list-style-type: none"> <li>Micronutrient Initiative</li> <li>IMA World Health</li> <li>Sabin/Global Network</li> </ul>	<ul style="list-style-type: none"> <li>Red Cross</li> <li>Volunteer Youth Corps</li> <li>Sabin/Global Network</li> </ul>
<b>Private Corporation / Foundation</b>	<ul style="list-style-type: none"> <li>FEMSA Foundation</li> <li>Cinépolis Foundation</li> </ul>	<ul style="list-style-type: none"> <li>GlaxoSmithKline</li> </ul>	<ul style="list-style-type: none"> <li>Bill &amp; Melinda Gates Foundation</li> <li>GlaxoSmithKline</li> <li>PepsiCo Foundation</li> <li>Digicel</li> <li>Abbott Laboratories</li> </ul>	<ul style="list-style-type: none"> <li>GlaxoSmithKline</li> </ul>
<b>Multilateral</b>	<ul style="list-style-type: none"> <li>PAHO</li> </ul>	<ul style="list-style-type: none"> <li>PAHO</li> </ul>	<ul style="list-style-type: none"> <li>UNICEF</li> <li>PAHO</li> <li>World Food Programme</li> </ul>	<ul style="list-style-type: none"> <li>PAHO</li> </ul>
<b>Other</b>	<ul style="list-style-type: none"> <li>Mesoamerica Health Initiative 2015</li> </ul>		<ul style="list-style-type: none"> <li>University of Notre Dame</li> <li>RTI International</li> <li>Hospital Sainte Croix</li> </ul>	<ul style="list-style-type: none"> <li>Guyana Water Inc.</li> </ul>

three workshops in 2013 (two in Brazil, one in Honduras), commissioned two studies on costing estimates (Bitran et al. 2009; Bitran and Associates 2013), published monitoring and evaluation (M&E) guidelines (P. Lammie et al. 2011), and published a number of other short articles on the web.

Faced with the fact that the main bilateral funders, the US and UK NTD control and elimination programs, are not prioritizing the LAC region, the initiative sought out a variety of alternative sources of funding for its demonstration projects, pursuing partnerships with local, state, and national governments, NGOs, private foundations and corporations, universities, bilateral donors, and multilateral organizations. A recent study by Dalberg (2013) commissioned by the Bill & Melinda Gates Foundation identifies governments from middle-income countries with high NTD burdens as the largest potential sources of new NTD program financing, followed by bilateral donors and contributions from the private sector and other partners. Table 4 summarizes the multitude of partners that contributed to four of the initiative's demonstration projects.

By offering initial seed funding for demonstration projects, the LAC NTD Initiative succeeded in convincing local governments in Brazil and Mexico to make significant investments in NTD control and elimination programs. The initiative was also able to acquire large contributions from private corporations and foundations such as PepsiCo Foundation, *FEMSA Foundation*, and *Cinépolis Foundation* to support individual projects. Adding NTD components to projects from other sectors also proved to be highly successful for obtaining funding and assistance. The initiative secured funding for deworming campaigns in Haiti and Guyana by attaching health components to existing water and sanitation loans. By refocusing its efforts on financing demonstration projects, the LAC NTD Initiative has been able to

illustrate the advantages and drawbacks of integrated NTD programs and produce a number of important lessons that will improve the implementation of such programs in the LAC region.

### **Integrated NTD Interventions: A New Path Forward**

Throughout the twentieth century, governments attempted to address the diseases now known as NTDs through control initiatives that targeted single diseases, with varying degrees of success. Successful disease-specific national programs used intersectoral approaches to combat schistosomiasis in China (Utzing et al. 2005) and Japan (Tanaka and Tsuji 1997) and hookworm in the southern United States (Bleakley 2007). Regional programs, such as the Onchocerciasis Elimination Program for the Americas<sup>10</sup> and the Guinea Worm Eradication Program, were also successful in bringing their respective diseases under control (Watts 1998). Many initiatives continue to act independently of each other and focus on specific diseases. In 2005, for example, six public-private partnerships (PPP) were operating vertical programs to address different NTDs in Africa (Molyneux, Hotez, and Fenwick 2005). In Latin America, at least three PPPs (Including the Onchocerciasis Elimination Program for the Americas, Children without Worms, and Global Alliance to Eliminate LF) have supported efforts to control or eliminate specific NTDs.

In an effort to use scarce resources more efficiently and effectively, the global health and development communities are promoting the integration of NTD programs. The term "integration" has been used to refer to three different approaches of combining NTD control efforts: merging vertical mass drug administration (MDA) programs to address multiple NTDs simultaneously by treating entire at-risk populations (Molyneux, Hotez, and Fenwick

<sup>10</sup> "Onchocerciasis Elimination Program for the Americas," The Carter Center, [http://www.cartercenter.org/health/river\\_blindness/oepa.html](http://www.cartercenter.org/health/river_blindness/oepa.html).

2005); integrating NTD control with other public health or disease control programs or within primary health systems (Hotez et al. 2006; Marchal et al. 2011); and collaborating with other sectors to eliminate risk factors (Ehrenberg and Ault 2005; J Utzinger et al. 2009; Savage, Velleman, and Wicken 2012).

Given the geographic overlap of many NTDs, their effect on children and pregnant women, and the possibility of reducing their burden through MDA, Molyneux, Hotez, and Fenwick (2005) proposed that a “rapid-impact intervention” of four drugs<sup>11</sup> be used to address seven NTDs<sup>12</sup> in Africa. Vertical programs would be combined to simultaneously distribute drugs through the same delivery mechanism, sharing costs on administration, personnel, transport, and M&E (Brady, Hooper, and Ottesen 2006). An estimated 500 million people in Africa could receive preventative chemotherapy for seven NTDs for a cost of only US\$0.40 per person per year (Molyneux, Hotez, and Fenwick 2005). Integrating MDA for five diseases<sup>13</sup> was projected to reduce the costs of treatment by 26 to 47 percent from that of implementing five separate programs (Brady, Hooper, and Ottesen 2006).

Integrating NTD programs with initiatives to control other diseases or within the primary health system could improve cost-effectiveness and produce positive externalities. For example, measures to address NTDs such as LF, Chagas disease, STH, and schistosomiasis could be added to malaria control programs. Bed nets distributed to prevent malaria would also be effective against LF and Chagas vectors, while deworming drugs distributed with the nets could treat hookworm and other intestinal parasites. Integrating these activities would be significantly cheaper than delivering separate interventions to isolated communities.

Studies suggest that deworming may reduce the likelihood of children getting malaria, while also reducing the mortality and morbidity levels of mothers and infants already infected (Molyneux and Nantulya 2004). There is also some evidence that being infected with intestinal parasites and schistosomiasis may increase susceptibility to HIV/AIDS or worsen the progression of AIDS and TB (Hotez et al. 2006). The LAC NTD Initiative suggests combining deworming programs with childhood immunization programs, routine antenatal and postnatal checkups, and community health worker visits (Global Network for Neglected Tropical Diseases 2011).

Integrating NTD programs into the primary health system can also result in a more efficient use of resources, more sustainable political and community support, and expanded services for other health conditions (Gyapong et al. 2010). Similarly, integrating NTD programs within primary health care has the potential to improve drug procurement and health information systems and the technical capacity of health workers, as well as create a foundation of community health volunteers. It would also prevent the potential negative effects of vertical programs such as the duplication of systems, misallocation of resources away from primary health care, and interruptions in basic services due to competing demands on staff (Marchal et al. 2011).

Advocates for an intersectoral approach to NTD control stress that many determinants of disease, such as unsafe water, poor sanitation and drainage, and air pollution, fall outside the realm of public health (Ehrenberg and Ault 2005). Improving rural housing, building modern drainage and sewer systems, providing potable water, and educating children about hand-washing are important components of sustainable NTD

<sup>11</sup> Albendazole, ivermectin (Mectizan), praziquantel, and azithromycin (Zithromax).

<sup>12</sup> *Ascaris*, *trichuris*, hookworm, schistosomiasis, onchocerciasis, lymphatic filariasis, and trachoma.

<sup>13</sup> LF, onchocerciasis, STH, schistosomiasis and trachoma.

control and elimination because many of the diseases are spread through direct or indirect contact with infected human feces or through vectors that live and breed in rivers and standing water<sup>14</sup> (Freeman et al. 2013). Moreover, these activities provide additional benefits beyond NTD control. Improved housing can reduce the risk of contracting respiratory infections and increase the value of a home, modern drainage and sewers can increase tourism and foreign investment, potable water can reduce the incidence of diarrhea, and hygiene education can also teach the importance of proper nutrition and other healthy behaviors (Ehrenberg and Ault 2005). Vertical MDA campaigns are certainly needed where a large percentage of the population is affected by NTDs, but the integration of programs into local health systems and with the water and sanitation sector are the only way to ensure that gains from these initiatives are sustainable (Utzinger et al. 2009). MDA campaigns could collaborate with water and sanitation projects by engaging policy makers with proposals for joint advocacy campaigns and conducting joint hygiene training, data collection and monitoring, and impact research (Freeman et al. 2013). Accordingly, the LAC NTD Initiative advocates for an intersectoral approach to addressing NTDs that incorporates integrated MDA and other health programs and social sectors (PAHO 2009b; 2011). It has also recommended school feeding and conditional cash transfer programs, as well as water and sanitation projects, as opportunities for possible integration with MDA campaigns. Project integration can most easily be achieved by creating partnerships with organizations that have other specialties or are working in other sectors (Global Network for Neglected Tropical Diseases 2011).

Mapping, monitoring, and evaluation present a cross-cutting opportunity for

integrating NTD programs. In an integrated mapping system, a surveyor could conduct interviews and perform diagnostic testing for multiple diseases in a single house visit, saving both time and money. Multi-disease surveys can produce additional savings (Baker et al. 2007b). There are various strategies for integrating M&E activities for multiple diseases or sectors. Examples include standardized definitions of treatment and coverage, common reporting forms, indicators that sum up coverage numbers across disease programs, common indicators such as anemia or disability, integrated survey instruments, and integrated data collection teams and data management systems (Baker et al. 2007b; Atun et al. 2010b; Eisen et al. 2011).

### **The Challenge of Integrated Programs**

There is a consensus that integrated NTD programs, in one form or another, should be more efficient and cost-effective than programs operating in parallel to address one specific disease. Yet, with all of the challenges of administering integrated programs, there is little empirical evidence demonstrating that they produce better health outcomes than parallel/vertical programs (Briggs and Garner 2006; Atun et al. 2010a).

There are a number of potential challenges specific to integrating MDA campaigns, beginning with the resentment among managers and staff that might emerge as programs are combined and roles and responsibilities are condensed. Additionally, program staff will need to receive training on new diseases and activities, and beneficiaries may be confused trying to understand the transmission and control of multiple diseases at once. The new responsibilities of delivering additional drugs could overwhelm community volunteers or create confusion

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<sup>14</sup> Human waste attracts flies that spread trachoma; STH eggs or larvae are passed from human waste to soil, food, or water; eggs of the worms that cause schistosomiasis are passed from human waste to rivers to snails and back to humans; LF parasites are transmitted by mosquitos which breed in standing water; dengue is spread by mosquitos; and onchocerciasis is transmitted by blackflies living in rivers (Freeman et al. 2013).

about which combinations of drugs are safe for particular groups of beneficiaries. Integrated MDA campaigns must also collect extensive data on disease overlap. They will need to be cautious about the development of drug resistance and will have to develop evaluation methods that can assess the differential impact of various drugs on multiple diseases (Kabatereine et al. 2010; Lammie, Fenwick, and Utzinger 2006; Molyneux, Hotez, and Fenwick 2005; Utzinger et al. 2009).

Existing case studies highlight additional challenges. In Mali, an evaluation of an integrated MDA program found that education and communication campaigns for beneficiaries were crucial to increasing drug compliance, while the program itself was hindered by a lack of motivation for drug distribution volunteers and delays in receiving donated drugs (Dembélé et al. 2012). In Nigeria, one study highlighted the importance of using a single criteria (i.e. the patient's height) for determining the correct dosage of all drugs distributed together (Hopkins et al. 2002), while another documented the difficulty in distributing multiple drugs when not all had been determined to be safe to be distributed in the same villages (Richards et al. 2006). In the Côte d'Ivoire, Acka et al. (2010) found that community-based communication programs were more effective than school-based programs at transmitting knowledge about NTDs because children were not as capable of spreading information to adults as vice versa. Despite these challenges, other case studies detail the successful implementation of joint malaria and trachoma surveys for little additional cost or effort (Emerson et al. 2008) and document the successful scaling up of integrated MDA programs (Linehan et al. 2011).

NTD programs that attempt to integrate into primary health systems must take special note of local culture, contexts, and management styles, and must be well planned and led (Gyapong et al. 2010). They also must be careful not to divert resources and staff time away from routine health activities (Marchal et al. 2011), and ought to

find the correct balance between generalists and disease specialists. In Nigeria, leprosy specialists feared they would lose their jobs when vertical programs were integrated into the health system, while general health workers preferred not to treat leprosy patients due to a fear of contracting the disease (Namadi, Visschedijk, and Samson 2002). In Nepal, general health workers routinely misdiagnosed or mishandled leprosy cases after services were integrated, suggesting that health workers required additional disease-specific training and mechanisms to refer cases to specialists (Raffe et al. 2013). Nevertheless, Baker et al. (2007a) report that vertical LF programs were successfully integrated into the primary health system in the Dominican Republic without any negative effects. The program used community volunteers to supplement the general health workforce, implemented the integration in a gradual and transparent manner to avoid problems with specialists and general staff, and provided extra training in management and record keeping.

Integrating NTD programs with water and sanitation, education, or other poverty-reduction programs is the most sustainable way to eliminate NTDs, but large infrastructure and education projects are costly and less attractive to international donors (Spiegel et al. 2010). Accordingly, MDA campaigns have been favored by international donors precisely due to their low cost and quick results (Hotez et al. 2007). In LAC alone, meeting the Millennium Development Goal target of reducing by half the proportion of people without safe water and basic sanitation would cost US\$15.4 billion, substantially more than the cost to control NTDs through MDA (Bitran et al. 2009). Additional challenges to integrating with other sectors can arise from differences in scales and timelines of interventions, as well as variations in the targeted populations. For example, water and sanitation infrastructure projects require a long-term commitment and large investments and tend to target urban areas, while MDA needs only to engage the community for a few short periods per year and generally targets

rural areas where NTD burdens are higher (Freeman et al. 2013). Few case studies discuss the implementation of intersectoral programs, but Brieger et al. (1997), in reviewing an intersectoral approach to guinea worm eradication in Nigeria, cite conflicts between the Ministry of Health (MOH) and the multitude of organizations responsible for safe water provision as the reason for the failure of the program. Another program in Nepal, however, has been successful combining water and sanitation investments, health education, deworming, and iron supplementation in schools. Rai et al. (2010) argue that establishing committees and working groups to enhance communication and coordination at every level, from the relevant national government ministries to local governments

and on down to teachers and community representatives, has been key to the success of the program.

Attempts to integrate disease mapping, monitoring, and evaluation activities are hampered by variations in sampling strategies and diagnostic methods, as well as the lack of geographical overlap of diseases. Additional challenges to joint M&E include differences in how treatment units are targeted (schools vs. villages), dealing with multiple donor requirements and reporting forms, and “recall bias”— as many interviewees may not be able to differentiate between the various treatments they received in the past (Baker et al. 2007b).

**Table 5** • Review of Existing Case Studies of Integrated NTD Programs

Country	Intervention	Conclusions	Citation
<b>Mali</b>	Integrated MDA for LF, STH, onchocerciasis, trachoma, schistosomiasis	Education and communication are needed to increase compliance  Lack of motivation for distributors, procurement delays are challenges	(Dembélé et al. 2012)
<b>Nigeria</b>	Integrated MDA for LF, schistosomiasis, onchocerciasis	Integrated MDA complicates drug dosages	(Hopkins et al. 2002)
<b>Nigeria</b>	Integrated MDA for LF, schistosomiasis, onchocerciasis	New guidelines needed that take into account distribution of multiple drugs at once	(Richards et al. 2006)
<b>Nepal</b>	Integrated leprosy care into primary health system	Many leprosy cases mishandled by primary physicians	(Raffe et al. 2013)
<b>Dominican Republic</b>	LF program (with MDA) integrated into primary health system	Improved performance and relationship between community and health centers  Need to invest in professional development and engage top management	(Baker et al. 2007a)
<b>Nigeria</b>	Safe water provision for guinea worm eradication	Poor relationship between MOH and water and sanitation organizations led to failure	(Brieger et al. 1997)
<b>Nepal</b>	Integrated water and sanitation, MDA, education, nutritional supplements against STH	Committees and working groups to coordinate activities at all levels key to success	(Rai et al. 2010)

## Guidelines and Lessons from Existing Literature for Integrating NTD Programs

Some authors offer general plans and guidelines for integrating NTD programs. Before beginning program integration, Kabatereine et al. (2010) suggest that implementers “identify NTD distribution and burden,” seek the establishment of a government committee to coordinate integration, develop a strategic plan for NTD control, engage potential partners, finalize the strategic plan with all stakeholders, and then collect baseline data. They also highlight several main lessons, stressing that the government should lead integration, “clear structures for coordination, implementation, and reporting” should be established (including at the local level), a comprehensive integration plan should be developed from the beginning, other strategies besides MDA should be considered, and other data should be collected in addition to coverage data. In their “code of best practice” for integrating vertical programs into health systems, Unger, De Paepe, and Green (2003) similarly stress that integration should be well planned out in order to avoid disrupting basic health services, should occur gradually,

should allow for some resources to be diverted to strengthen health centers, and that administration and operations be simultaneously integrated. With respect to integrating NTD programs with water and sanitation projects, Freeman et al. (2013) suggest that the two sectors first need to open a dialogue on shared goals and the benefits of collaboration, and begin looking for opportunities to work together. They identify joint advocacy, data collection, capacity building, and research, and are hopeful that collaboration in these activities will lead to further integration between the sectors in the future. Similarly, Savage, Velleman, and Wicken (2012) advocate for water and sanitation and NTD specialists to look for new communication opportunities, share data, increase the availability of evidence linking water and sanitation improvements to NTD control, and try to “speak the same language” when considering collaborative projects. They also call on larger organizations to look for opportunities to integrate NTD and water and sanitation activities internally to increase the chances of establishing successful partnerships with other organizations.

**Table 6** • Review of Lessons Learned for Integrating NTD Programs

Lessons	Citation
Integration should be government-led. Establish clear coordinating, implementing, reporting structures. Use other strategies besides MDA.	Kabatereine et al. (2010)
Integration of NTD programs into primary health systems should be gradual. Health centers should receive additional funding during integration.	Unger, De Paepe, and Green (2003)
Water and sanitation and health can coordinate advocacy, data collection, capacity building, research.	Freeman et al. (2013)
Joint communication, shared data, increased evidence linking water and sanitation and NTDs are opportunities for collaboration.	Savage, Velleman, and Wicken (2012)



# Conceptual Framework and Methodology for Analyzing Integrated Programs

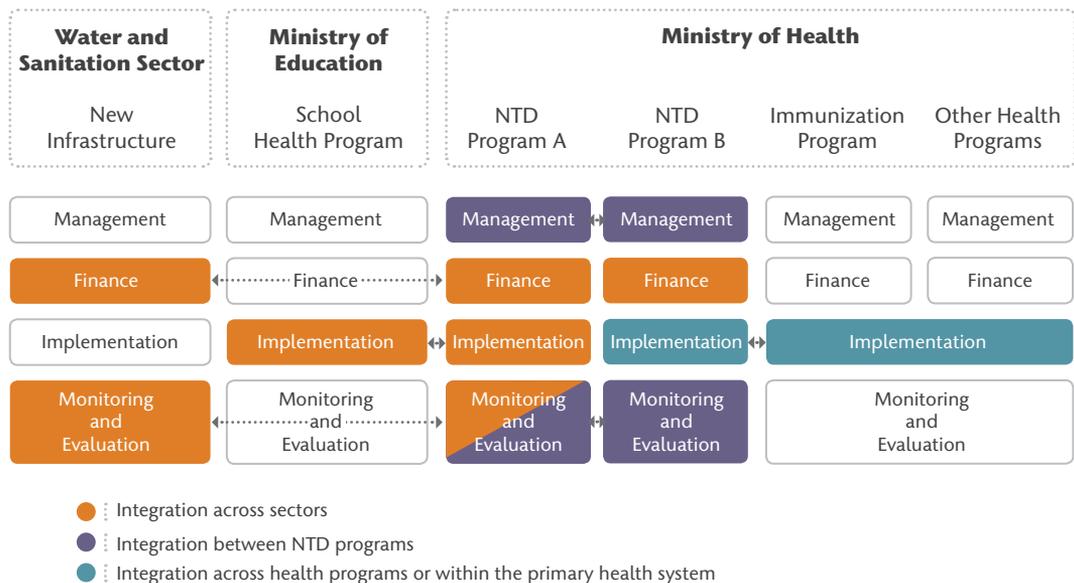
Jonathan Cali

## Definition of Integration

The LAC NTD Initiative conceptualizes three distinct forms of integration. The first type involves addressing multiple NTDs by conducting joint activities, such as joint screening or MDA campaigns. For example, the Chiapas demonstration project sought to distribute treatment for both STH and trachoma, while the Guyana project included an MDA campaign for STH and LF. The second type of integration incorporates NTD programs into other vertical health programs or into the general health care system. For example, MDA campaigns can be integrated with vaccination campaigns,

and leprosy treatment can be integrated into the primary health system. The third type of integration links NTD interventions to programs and projects from other sectors, such as linking MDA with educational campaigns in schools. All four LAC NTD Initiative demonstration projects addressed multiple NTDs simultaneously (first type of integration). In addition, all of them included an education or communication component to change unhealthy behaviors and break down stigma. One of the Haiti projects integrated MDA for STH and LF into a Child Health Week campaign (second type of integration). The projects in Recife and in Haiti included prevention activities at the

Figure 3 • Types of Program Integration



Source: Authors

schools, while the Guyana and Haiti projects also included efforts to improve sanitation and clean water provision (third type of integration).

### Conceptual Framework

One objective of this study is to determine the level and process of integration of the various components of the LAC NTD Initiative demonstration projects in order to draw relevant lessons for project managers and policy makers. With this objective in mind, this book analyzes the integration of the four projects using a conceptual framework adapted from Atun, Ohiri, and Adeyi (2008), Atun et al. (2010b), and Shigayeva et al. (2010)'s "conceptual framework for analyzing integration of targeted health interventions into health systems." It is based on the Systemic Rapid Assessment and Monitoring (SRAM) toolkit which was first proposed by Atun et al. (2004) as a framework for analyzing infectious disease programs and their interactions with the wider health system. Atun et al. (2010b)'s framework has been used in several case studies analyzing the integration of HIV, TB, and malaria control programs (Hanvoravongchai, Warakamin, and Coker 2010) both with primary health systems (Mounier-Jack et al. 2010; Desai et al. 2010; Trägård and Shrestha 2010; Rudge et al. 2010) and with each other (Conseil, Mounier-Jack, and Coker 2010) in Southeast Asia.

### Components of NTD Programs

The adapted framework employed in this book identifies four *components* of programs (Management, Financing, Implementation, and Monitoring and Evaluation) that can be independently analyzed to determine the extent to which (and how) each of them is integrated into another program (Shigayeva et al. 2010). Each of these components is made up of several *elements* whose level of integration can be observed in practice.

The management component is comprised of five elements. *Political will* refers to the degree to which a political coalition develops among sectors or

disease specialties. A *project coordinating unit* (PCU) is the decision-making body responsible for day-to-day execution of the project. The existence of a PCU, its representation, and the division of its responsibilities determine its level of integration. *Planning and operations* refers to the degree to which various sectors or disease programs are incorporated into the creation of a strategic plan and the oversight of its implementation. *Human resource management structure* refers to the chain of command of the project. In projects with integrated management structures, multi-disciplinary managers oversee staff working on multiple diseases or sectors, while in non-integrated management structures, staff report to disease or sector-specific managers. The *administration of supplies/materials* refers to the structures in place for procuring and inventorying supplies.

The financing component includes two elements. The *funding source* element addresses questions concerning the number of funders or donors for each aspect of a project, coordination between funders, and various conditions that funding organizations may place on the use of resources. *Administration of funding and payments* refers to the pooling or ring-fencing of funds and the structures that are created to pay staff and audit expenses.

The implementation component is comprised of three elements. *Division of labor* addresses the use of multi-disciplinary or multi-function personnel, in contrast to specialized staff who work exclusively with specific diseases or sectors. *Training and capacity building* refers to the extent to which training sessions include staff from different sectors and the degree to which training curriculum encompasses multiple diseases or control strategies. *Distribution and use of supplies and materials* refers to the manner in which medicines, diagnostic tools, and other goods are distributed during campaigns, the degree to which resources are shared among disease programs and sectors, and the use of multi-purpose materials, such as multi-disease educational pamphlets.

**Table 7** • Essential Components and Elements of NTD Programs

Components	Elements
Management	Political will Project coordinating unit Planning and operations Human resource management structures Administration of supplies/materials
Financing	Funding source Administration of finances and payments
Implementation	Division of labor Training and capacity building Distribution and use of supplies/materials
Monitoring and Evaluation (M&E)	M&E systems M&E strategy Data management

Source: Adapted from Shigayeva et al. (2010, i13).

Finally, the M&E component includes three elements. *M&E systems* refers to the survey instruments utilized, the choice and definition of indicators, and mechanisms for collecting data. *M&E strategy* refers to the level of coordination of mapping, monitoring, and evaluation plans among diseases and sectors, and *data management* addresses the systems used to store and analyze data.

### Levels of Integration

The integration of health programs can be thought of as occurring on a continuum that spans the full range of integration levels. The Shigayeva et al. (2010) framework identifies four distinct levels of integration. Each component of a program can be classified as having no formal interactions (not integrated with other programs), having a linkage (partially integrated), being coordinated (partially integrated), or being fully integrated. Components that have no formal interactions with other programs operate in parallel. *Completely non-integrated programs* have separate, disease-specific governance and policy structures, are funded from different budgets or international donors, and are staffed by single-disease specialists and project-specific administrative personnel. A *linkage* is defined

as an “unstructured interaction” between programs or components of different programs (Shigayeva et al. 2010, p. i14). For example, informational meetings may be held between management of different programs on an *ad hoc* basis, services for two separate diseases may be provided at the same location by separate staff not working in conjunction with each other, and all evaluation data for the program may be collected by the same people but reported to separate, disease-specific evaluation systems. *Coordination* refers to programs that collaborate to achieve their goals but maintain their individual identities and official structures. For example, independent programs may establish a coordinating committee to oversee joint activities, establish guidelines stipulating financial contributions of each program, share staff and facilities, and use some similar M&E indicators. Full *integration* refers to the complete merging of some or all components of different programs. Management structures may be merged into a single body, all funding is pooled, staff work in multi-disciplinary teams under the same management, and M&E is conducted through a single, comprehensive data collection and analysis system (Shigayeva et al. 2010).



the actors who implement the programs (such as policy makers, managers, and health workers). Their incentives, interests, and perceptions of the program are likely to affect its ability to be integrated. Integration is more likely to be successful if the incentives and values of the actors from each program/sector/disease specialty are aligned. The *characteristics of the health system* in which the program is being implemented, such as its regulatory, organizational, financial, and clinical arrangements, can also affect integration, especially when it comes to the integration of NTD control programs into the primary health care system. Finally, the political, demographic, economic, legal, socio-cultural, ecological, and technological *context* within which programs are being implemented, as well as important events that occur during implementation, can affect the integration of programs. A change in governments, the invention of new medicines or medical devices, the existence of strong evidence, and funding requirements imposed by donors could all impact integration attempts in one way or another (Atun et al. 2010).

## Methodology

Primary and secondary data was used to analyze the integration of the four demonstration projects in Brazil, Guyana, Haiti, and Mexico. Primary data was collected using semi-structured interviews of key informants. Secondary data consisted of project documents (operational plans, project reports, and educational materials developed, among others). In the case of Recife and Guyana, preliminary evaluation results also informed the analysis of this book.

A group of specialists conducted a process evaluation of the four demonstration projects. They developed a series of evaluation questions and identified key participants to interview, such as ministry of health officials, nurses and other project

staff, and sanitation and education officials who participated in the project. From October 2013 to January 2014, 40 semi-structured interviews were conducted in Brazil, Guyana, Haiti, and Mexico. The interview responses were analyzed and compiled into a single report for each demonstration project. The information from these reports was used to create the case studies presented in this book.

There were two significant shortcomings to this study. First, the implementation of project activities was not randomized geographically to be able to exploit a credible control group. Thus, the before-and-after comparisons presented in this book should be interpreted in the context of program monitoring, and not as causal impacts. Secondly, this study was unable to collect accurate, detailed costing information on all the activities conducted in each intervention, given that the demonstration projects financed only part of the implementation costs (for instance, they did not finance salaries of the government employees who participated). The lack of costing and impact data for some of the projects prevented them from being compared with more traditional, parallel NTD programs in terms of cost-effectiveness and efficiency.

## Case Studies: Demonstration Projects in Brazil, Guyana, Haiti, and Mexico

The following four chapters present analyses of each of the four demonstration projects. After discussing the context, targeted diseases, and justification for employing an integrated approach, they analyze the integration of the management, financing, implementation, and M&E of each project according to the conceptual framework discussed above. Preliminary results regarding the effects of projects in Recife and Guyana are also presented.



Know this story: ***A small revolution*** | [vimeo.com/71602469](https://vimeo.com/71602469)



# Recife Metropolitan Area, Brazil

Jonathan Cali, Denise S.C. Oliveira, Nancy Armenta

## Context

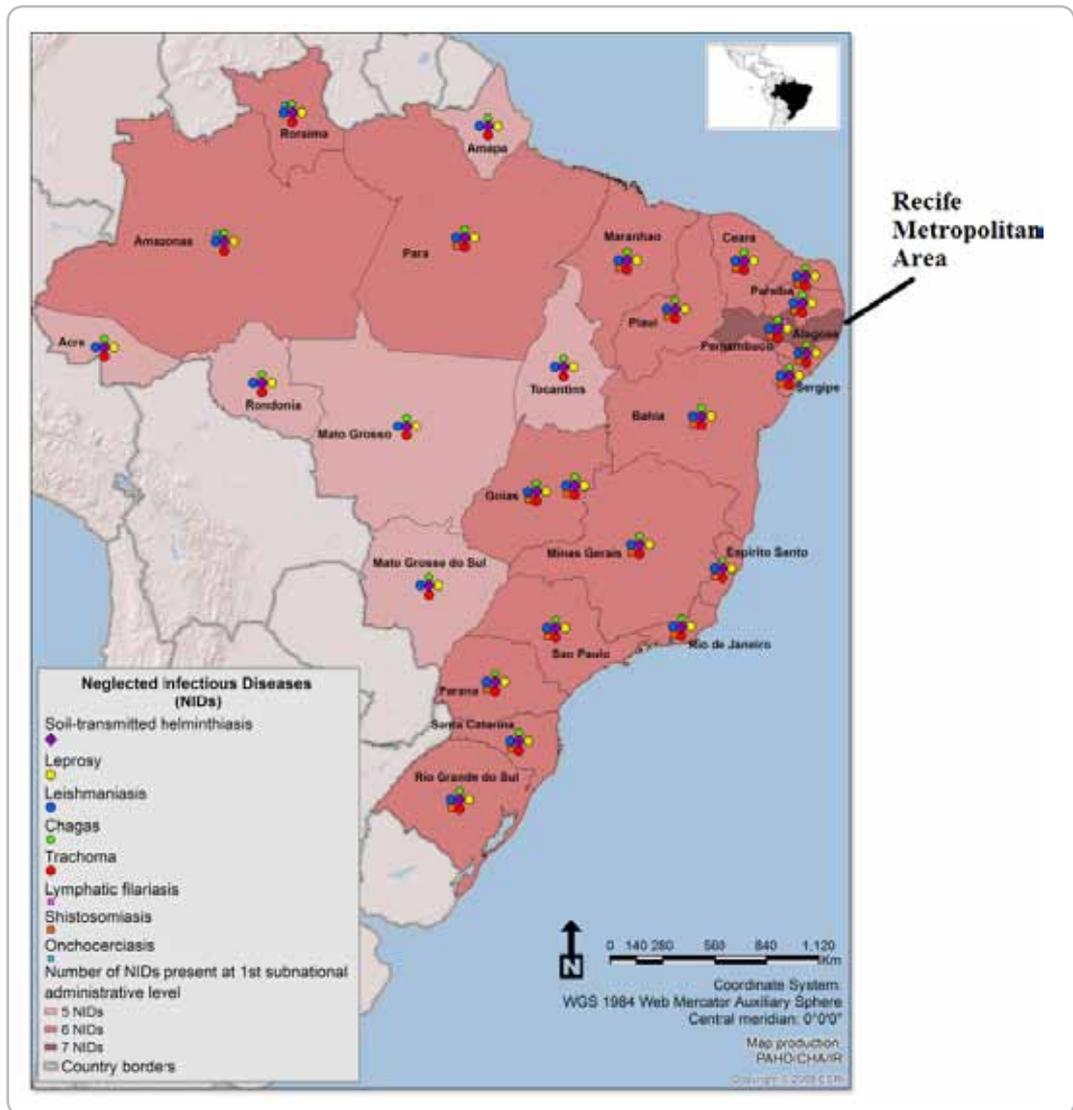
Despite its recent strides in economic growth and poverty reduction, Brazil still has the largest NTD burden in the LAC region. As many as nine different NTDs can be found in some areas of the country (Lindoso and Lindoso 2009). Recife is the fourth largest city in Brazil and is the capital of Pernambuco State in the northeast of the country. Three municipalities (Recife, Olinda, and Jaboatão dos Guararapes) in the Recife Metropolitan Area (RMA) were prioritized for this project given that they had the highest overlap of NTDs in the country and that they were the only municipalities in Brazil that had not yet eliminated LF. The targeted municipalities have a combined population of more than 2.5 million people, many of whom do not have access to adequate sanitation, garbage collection, and potable water. For example, only 40.3 percent of households in RMA were connected to the sewage system in 2008 and almost 11 percent did not have piped water.<sup>15</sup>

Low quality services and high rates of poverty and inequality create the conditions where at least four NTDs can thrive: STH, leprosy, LF, and schistosomiasis. STH, or soil-transmitted helminths, are intestinal parasites that are transmitted through contaminated food, soil, and water. STH infections cause abdominal pain, diarrhea, weight loss, dehydration, malnutrition, and anemia, as well as cognitive impairment

in children. STH infection can be cured quickly, cheaply and safely with a single dose of an anthelmintic drug such as 400 mg of albendazole. Leprosy, also known as Hansen's disease, is caused by the bacillus *Mycobacterium leprae* and is transmitted via droplets from the nose and mouth through close and frequent contact with untreated cases. If left untreated, leprosy can cause permanent damage to the skin, nerves, limbs, and eyes. The main treatment for leprosy is multidrug therapy with the antibiotics dapsone, rifampicin, and clofazimine for six to 12 months. LF, also known as elephantiasis, is caused by the thread-like parasitic filarial worms *Wuchereria bancrofti* and *Brugia malayi*, which live in the lymphatic system and can cause extreme swelling of the extremities and genitals. LF can be cured with single doses of albendazole and diethylcarbamazine (DEC). Schistosomiasis is a parasitic disease transmitted through contact with contaminated fresh water where snails carry the parasite, which enters the body during everyday activities such as bathing, fishing, swimming, washing clothes, or herding livestock. Schistosomiasis causes abdominal pain, fever, chills, muscle aches, inflammation or scarring of the bladder, lymph node enlargement, and enlargement of the liver or spleen. Repeated infection can cause anemia, malnutrition, and learning disabilities in children. The infection can be cured with the drug Praziquantel.

<sup>15</sup> Pesquisa Nacional por Amostra de Domicílios (PNAD) [http://www.ibge.gov.br/home/estatistica/populacao/condicaoedevida/indicadoresminimos/sinteseindicsoiais2009/indic\\_sociais2009.pdf](http://www.ibge.gov.br/home/estatistica/populacao/condicaoedevida/indicadoresminimos/sinteseindicsoiais2009/indic_sociais2009.pdf)

Figure 5 • Overlapping NTDs in Brazil



Source: PAHO (2013)

The Recife demonstration project was designed at the end of 2009 and began implementation in 42 schools in 2011. At baseline, STH prevalence in the target schools was estimated at 23.6 percent. Schistosomiasis prevalence in the region was 2.6 percent, with all cases occurring in Jaboatão dos Guararapes, which had a prevalence of 6.8 percent. LF prevalence was 0.01 percent (only one case, in Recife). Twenty-nine cases of leprosy were diagnosed

out of a total of 796 suspected cases brought to the attention of health workers (Oliveira 2013). To address this NTD burden, the project developed innovative self-image cards for leprosy (which instruct youngsters and their families how to identify suspicious skin lesions), conducted integrated MDA campaigns to treat STH and schistosomiasis, evaluated the prevalence of LF, and implemented community education and training activities to teach children and

schoolteachers about the diseases and how to prevent them. The project's target population consisted of 16,482 students ages 6 to 14, and an additional 70,000 people benefited indirectly through health education and treatment components of the project (Oliveira 2013).

### Purpose of Integration

Before the implementation of this project, each of the three targeted municipalities was managing three separate programs – one for LF, one for leprosy, and one for STH and schistosomiasis – in addition to a separate education program. The project sought to integrate the programs to combat the four NTDs simultaneously, coordinate activities between the three municipal governments, and encourage collaboration between the health and education sectors in order to streamline operational activities, increase efficiency and cost effectiveness, and ensure that the priority health needs of communities are comprehensively met.

### Integration of Project Components

#### Management

The management tasks of the project were shared by all parties involved. The *Professor Fernando Figueira Institute of Integrative Medicine* (IMIP), a local philanthropic and research organization providing medical, educational, and social services, was selected as the coordinating unit for the project and was responsible for supervising the integration among various actors. Additionally, a management committee was created, with representatives from IMIP, IDB, and the health secretariats of Recife, Olinda, and Jaboatão dos Guararapes. In the initial planning stages, the leprosy, LF, and STH/schistosomiasis program directors of each municipality and a representative from Epidemiology and Health Surveillance of the Recife State Health Authority formed this committee, which was later joined by a representative from IMIP and a coordinator representing each municipality. When the committee transitioned away

from planning to assume a managerial and administrative role, the number of participants was reduced to the three municipal coordinators, two representatives from IMIP, and a representative from the IDB. The management committee fulfilled most core management responsibilities, including hiring, procuring goods and services, administering project resources, defining the work plan, validating municipal activity reports, and establishing M&E indicators. The committee discussed and approved all major decisions and agreements in monthly meetings, and held additional meetings when required. In interviews, respondents from participating organizations expressed that the management committee enabled all three municipalities to work together as one cohesive unit in the management of the project.

Through the course of the planning and implementation stages, a strong political coalition was built between all participants of the project, which included IMIP, the municipalities, the school health program, the participating schools, and the teachers, parents, and students involved. Interviewed officials cited the fact that each organization had a place on the management committee as important to their success in building political will among all stakeholders. The integrated management structure helped actors from different sectors reach agreement on major decisions and on the tasks that each was responsible for. As the project was implemented, early compliance with the work plan and the launch of a national school health program helped to build trust between the education and health sectors. Staff from the school health program was instrumental in facilitating communication between the project's health staff and school directors who had already begun working with the school health program. Efforts to educate families about the diseases and keep them informed about upcoming activities helped to win their support and consent for the project.

The integrated nature of the management committee and its role in planning and oversight ensured that the project was

developed in the same way in each of the municipalities, and that activities to address the four targeted NTDs were fully coordinated. Education specialists and representatives from the municipal educational authority participated in the committee meetings on the design and planning of education materials and activities. Interview respondents expressed their satisfaction that all the municipalities had equal say in the planning of the project and that their inclusion essentially guaranteed that the project was implemented in a transparent manner. For example, officials from Jaboatão declared that “the work was very integrated, everyone was equal, and all were prepared to work in the same way. They held periodic meetings for follow-up and monitoring.” They also praised the work of the management committee and IMIP for keeping the project on task and for managing project resources.

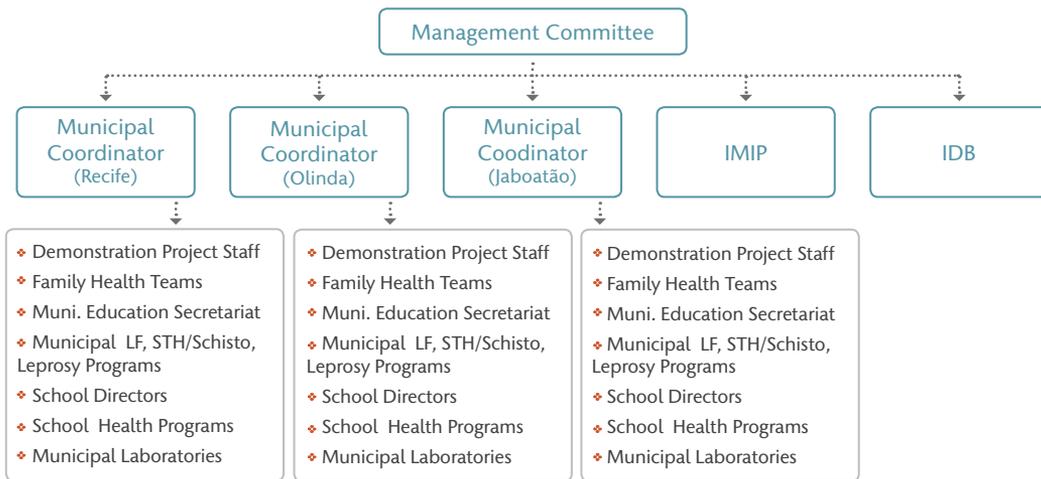
Within each locality, a municipal coordinator served as the link between the management committee and activities implemented in the schools. These coordinators translated committee decisions into action by organizing activities between primary health care providers, Epidemiology and Health Surveillance directors, municipal laboratories, school health programs, the directors of the participating schools, and officials from the municipal education authorities. The coordinator held meetings to develop detailed work plans and make adjustments to school-based activities, and reported progress back to the committee. One challenge cited by people interviewed was the difficulty in scheduling health education programs and deworming campaigns without interfering with school curriculums. Nevertheless, interviewees said that communication between municipal coordinators, school directors, and teachers was excellent, and that once time was found for the health events, the program ran relatively smoothly. One teacher from a school in Recife gave an example of additional benefits of the project, saying “we had the opportunity to work with and get to know the entire primary health team, which now continues to support us in other projects.”

The Recife project was implemented using staff from a variety of organizations. The management committee determined the need and profiles of all staff that participated in the project. The three municipalities independently provided staff from local *family health teams*, which were made up of doctors, nurses, and other health workers who provide primary care to municipalities nationwide. Staff members from the leprosy, epidemiological surveillance, and environmental surveillance units participated, and were managed by each municipality’s health authority. In addition, teachers and school directors from each municipality played a vital role in the project. In all, the municipalities contributed 56 staff members, while another 45 were hired directly by the project (Oliveira and Armenta 2013b).

In addition to the coordinators, employees hired by the project included general health technicians, technicians to administer the LF tests, education experts, and drivers. Candidates for employment with the project were interviewed by a team composed of IMIP and representatives from the three municipalities. New hires were officially contracted by IMIP, which according to interview respondents, allowed the project to bypass the government hiring bureaucracy and avoid delays. Employees hired by the project were supervised by the management committee and paid by IMIP, but municipal coordinators were responsible for day-to-day management of staff working in their municipalities. All decisions regarding the procurement of materials and resources were made by the management committee, including the design of educational materials. IMIP assisted with the administrative functions of ordering and purchasing supplies, which people interviewed also cited as an important feature of the project design that reduced delays and avoided excessive bureaucracy.

After seeing the promising preliminary results from the first few months of implementation, the Brazilian MOH decided to expand deworming and leprosy screening with self-image cards to the rest of the

Figure 6 • Management Structure of Recife Demonstration Project



Source: Authors

country, a clear sign that political support for the project model had reached the highest levels nationally.

Overall, the management component of the Recife demonstration project can be classified as *integrated* among diseases, within the general health system, and between sectors, as measured by Shigayeva et al. (2010)’s framework. The project and its design received strong political support from all actors involved, and interviews did not reveal any disagreements between stakeholders on the strategy adopted by the project. A management committee with representatives from each municipality served as the PCU of the project. It met regularly and operated as a single cohesive unit responsible for all planning and operational tasks. Specialists from each targeted disease and from the education sector played an integral part in the planning of the project, and primary care staff participated in its implementation. Human resources management was split between the committee and municipalities, but each participating institution oversaw staff from a variety of disciplines. Also, hiring decisions and allocation of tasks were coordinated by the managing committee. Finally, all procurement decisions were made by the committee and most supplies were centrally

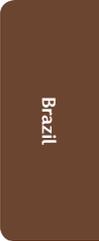
procured through IMIP, with the exception of the deworming medication provided by the Brazilian MOH.

**Financing**

This project was financed by the LAC NTD Initiative, which contributed about 58 percent of the funds, and the municipal governments of Recife, Olinda, and Jaboatão dos Guararapes, which contributed the remaining 42 percent of the costs, in addition to providing transportation (IDB 2012b). IMIP agreed to waive its standard 25 percent administrative rate so that the project would have additional resources for operations and procurement of materials (Oliveira and Armenta 2013b).

In management committee meetings, IMIP and the municipal representatives jointly determined how costs would be shared. The municipalities administered their own financial contributions to the project, guided by their agreement with the management committee.

The financing of the project is classified as *coordinated*. Funding was provided by five separate entities, including IMIP in the form of a waiver of its administrative fee. Financing was administered separately



by four entities, with the municipalities administering their own funds rather than pooling them together with the funds controlled by IMIP, but this is still considered to be coordinated because the management committee defined all of the activities to be funded and which entity would finance them. Funding was not divided by disease or by sector, and funds provided by the municipalities were allotted from their general health budgets.

## Implementation

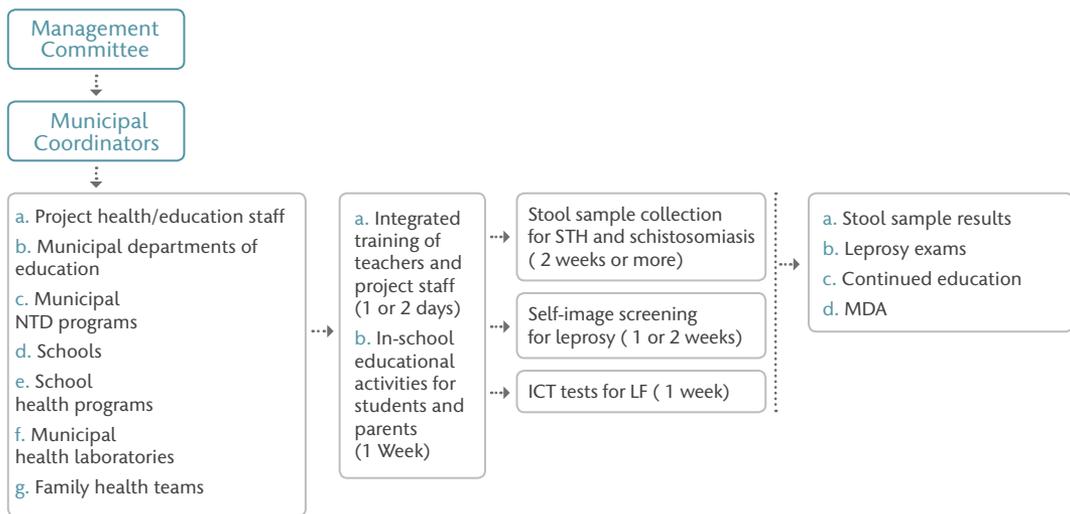
The Recife project was implemented by a multi-disciplinary team, of which some members performed multiple functions while others focused on their specialties. Education experts worked across the four diseases to develop integrated educational materials. Lab technicians examined stool samples for schistosomiasis and STH. Teachers and students were trained to identify symptoms of the diseases and refer their (fellow) students to the local health centers to be diagnosed and treated.

For the treatment of schistosomiasis and STH, the Brazilian MOH provided deworming medicine to the municipal health authorities, which allocated them to the schools. Health technicians hired by the project and members of the school health programs were used to administer albendazole for STH to every student in each of the 42 schools targeted by the project. Only one school was found to have a high prevalence of schistosomiasis, so the medications for both diseases were distributed together in that school. The single LF case found in the baseline survey was treated through the primary health system. The same health technicians also visited schools to distribute self-image cards for leprosy, while leprosy specialists examined all suspected cases, scheduled appointments with *family health teams* for children requiring additional examination and treatment, and assisted in examining the contacts of positive cases.

The implementation of the Recife project involved several types of training and education programs. To save time and money, the coordinators of the three disease programs from each municipality organized joint training sessions for all staff hired by the project on how to prevent, control, and diagnose all four NTDs before activities were implemented in the schools. Staff did not report having any difficulties understanding the material. Teachers and primary health care workers were also jointly trained to identify symptoms of the diseases. A total of 829 people, including teachers, health workers, and school administrators, were trained by the project (Oliveira 2013).

In addition to receiving the self-image cards for leprosy, students were also educated on how to control and prevent NTDs, with the expectation that they would share the information with their families. Throughout the course of a week, health technicians and education specialists worked with teachers to show an animated video, perform skits, teach songs, and distribute a comic book, banners, and pens that featured three school-aged characters representing each of the municipalities. Parents were also invited to attend the sessions. The educational cartoon video was composed of three short episodes providing information on all four of the NTDs, allowing significant cost savings compared to making four separate video programs. In most schools, younger children were shown the episodes one at a time on separate days to avoid overwhelming them with information, while older students learned about all diseases in one sitting. While a number of children still had a difficult time differentiating the diseases and their causes, the campaign's flashy characters and fun activities did help the students remember the project as a whole, with many of them referring to the education campaign as the *Caravana Prudente*,<sup>16</sup> a term that had been featured in the video.

Figure 7 • Diagram of Recife Demonstration Project Activities



Source: Recife Project

The implementation of the project is classified as *integrated*. Joint MDA was conducted for STH and schistosomiasis in places where both had a high prevalence, while LF, due to its low prevalence, was addressed through the health system on a case by case basis in the remaining schools. Leprosy was treated through the primary health care system. Educational and training activities were integrated among diseases and between sectors using the same standardized materials. Education sessions were conducted in schools by both health and education specialists, including primary school teachers. Further, all project staff received training on all four target diseases and primary health workers played a crucial role in the integration of the project.

### Monitoring and Evaluation

The management committee bore the ultimate responsibility for overseeing M&E activities. For monitoring, the municipal coordinators oversaw project activities at the local level and submitted reports to the management committee at monthly meetings. Reports included the number of schools where activities were implemented, the number of cases of leprosy identified,

teachers trained, surveys conducted, LF exams given, and positive parasite cases found. The data for these reports was collected by health technicians on a standardized form during the deworming campaigns. The municipalities shared their experiences during these meetings and, with input from the management committee, made the necessary adjustments to their timelines and work plans based on lessons learned. IDB and PAHO staff visited schools to verify that education activities were indeed taking place.

Baseline data was collected throughout 2012 and the first half of 2013. Specialists conducted LF testing on a general sample of community members in the three municipalities using Immunochromatographic test (ICT) cards. Health technicians and nurses conducted STH and schistosomiasis prevalence tests on samples from the targeted schools, where they also distributed to all 16,482 students self-image cards showing them how to identify and report possible leprosy lesions. The project contracted an independent researcher to conduct a survey on leprosy knowledge, attitude, and practice (KAP) in the community, since the presence of a

Table 8 • Integration of Recife Project Components

Components	Elements	Level of Integration	Justification	Overall Integration
<b>Management</b>	Political will	Integrated	Support from education and health sectors; municipal and national governments.	<b>Integrated</b>
	Project coordinating unit	Integrated	Committee of all parties operating as one cohesive unit; met regularly.	
	Planning and operations	Integrated	Committee for planning and management; all diseases, municipalities, and education sector represented.	
	Human resource management structures	Integrated	Some staff managed/provided by municipalities, others by managing committee, but not divided by discipline.	
	Administration of supplies/materials	Integrated	All decisions made by management committee, actual procurement by IMIP for all materials except transportation; drugs provided by Brazilian MOH.	
<b>Financing</b>	Funding source	Coordinated	Funding from Sabin/Global Network, each municipality, and IMIP through waiving fee.	<b>Coordinated</b>
	Administration of finances and payments	Coordinated	Administered by IMIP and municipalities, funding decisions made by joint committee.	
<b>Implementation</b>	Division of labor	Integrated	Generalist health technicians, primary health workers, and teachers used for education and drug distribution for multiple diseases.	<b>Integrated</b>
	Training and capacity building	Integrated	All project staff trained together in all diseases with standardized material; teachers and primary health workers trained together in schools on all diseases.	
	Distribution and use of supplies/materials	Coordinated	MOH provided all medication to municipal health authorities. STH and schistosomiasis treated together, LF and leprosy treated separately. Education conducted by both health and education staff, taught four diseases at once to some students, separately for others.	
<b>Monitoring and Evaluation</b>	M&E systems	Linked	Standardized forms for deworming coverage; most screening conducted in single visit. Different data collectors for different diseases.	<b>Linked</b>
	M&E strategy	Coordinated	Management committee/municipal coordinators oversaw monitoring; standard indicators were used across municipalities but not diseases.	
	Data management	Linked	Different databases for different disease data, but stored on national information systems and shared.	

Source: Authors

stigma against leprosy can prevent affected people from seeking treatment. Health technicians conducted an assessment to determine the presence of snails, a schistosomiasis host, in areas around the schools in order to verify the source of infection.

In November 2013, the IDB designed and conducted a basic before-and-after evaluation of the Recife demonstration project. This evaluation sought to verify the reduction in STH prevalence and infection intensity in school-aged children. Project staff performed Kato-Katz parasite exams for STH on a random sample of children at the school in each municipality that had the highest STH prevalence at baseline. Each of these schools had received one round of MDA for STH three to six months before the evaluation. Additionally, the evaluation aimed to confirm the improved detection of leprosy cases in children younger than 15 years old, improved leprosy cure rates, improved proportion of household contacts examined, and a reduced rate of treatment noncompliance. An IDB consultant collected administrative data from the municipalities on leprosy in children in 2010 and 2011 and compared it to the data collected from all schools implementing the demonstration project. The results of this comparison are reported below.

The STH data collected during M&E of the project was stored in the project team's own database, while data on the MDA campaign was stored in a national database called *FormSUS*, which is run by the MOH, where it could be disaggregated by municipality. The project stored new leprosy data in a national information system called *SINAN*, where it can be accessed by researchers and public health officials.

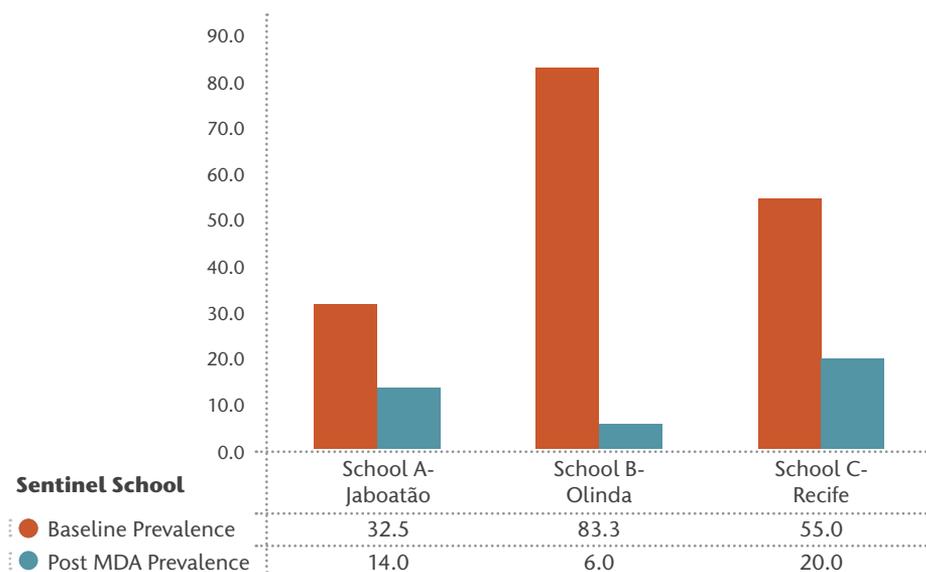
The M&E of the project is classified as *linked*. In most schools, leprosy self-image cards were distributed at the same time as testing for schistosomiasis and STH was being conducted. However, the three target diseases needed to be monitored and evaluated using separate techniques, thereby offering little opportunity for

M&E integration. Moreover, exams for each disease were conducted by separate specialists. An evaluation was conducted only for STH and leprosy, which are each measured using entirely different indicators (for example, egg intensity and prevalence vs. detection rate per 10,000 people). The project stored data by disease in separate databases, although these databases are used by municipalities nationwide to store epidemiological data and are accessible to all policy makers and researchers nationwide. M&E activities were linked because the management committee and IDB determined what needed to be monitored and contracted and oversaw the various evaluation teams in an integrated way.

### Project Results

The school deworming activities deployed as part of the Recife demonstration project coincided with a sharp reduction in STH prevalence and intensity of infection over the short term in all three schools that were evaluated. To evaluate the results of the interventions, a before-and-after analysis was performed using three sentinel sites (one school in each municipality). At baseline, the sentinel school in Jaboatão had an STH prevalence of 32.5 percent, the sentinel school in Olinda had a prevalence of 83.3 percent, and the sentinel school in Recife had a prevalence of 55 percent (Oliveira 2014). The follow-up survey determined that 88.3 percent of the students in the Jaboatão school had received treatment and the prevalence was reduced to 14 percent. In the Olinda sentinel school, 78.3 percent of the students were covered and prevalence was reduced to 6 percent. The Recife sentinel school had a coverage rate of 98 percent and prevalence of STH was reduced to 20 percent. Overall, the three sentinel schools had significant reductions in STH prevalence passing from a level of infection considered very high (and thereby a public health problem) to a low risk of infection (20 percent prevalence or less) (Oliveira 2014). Moreover, the analysis found that 82 percent of the children who were still infected with STH had a low intensity

Figure 8 • Prevalence of STH in RMA Sentinel Schools, Before and After MDA



Source: IDB

of infection, as defined by the density of parasite eggs identified in the samples. Children with lower intensity infections may be less likely to suffer from severe symptoms (Harhay, Horton, and Olliaro 2010). Despite the overwhelmingly positive results observed after the first round of MDA, at least an additional four to ten years of deworming coupled with hygiene education and sanitation improvements are needed to sustain these gains (Anderson, Truscott, and Hollingsworth 2014).

The leprosy component of the evaluation also demonstrated positive results. In Jaboatão, the detection rate of new cases through the project was higher (16.5/100,000 versus 13.5/100,000) compared to the cases detected through the primary health system the year before. The cure rates were almost 20 percentage points higher through the project (100 percent vs. 80.9), the proportion of household contacts examined was more than 56 percentage points higher (100 percent vs. 43.8), and there was no treatment noncompliance, compared to 9.5 percent in the primary health system. In Olinda,

the detection of new cases was 151.3 cases per 100,000 compared to 34.8 per 100,000 in the primary health system. The cure rate through the project was 100 percent, almost 40 percentage points higher, but the proportion of contacts examined was about 10 percentage points lower than in the primary health system. This was mostly because the health workers in Olinda did not have enough time to examine all of the household contacts in the short time between the implementation of the program and the time of the evaluation. Finally, in Recife the detection rate through the project was 419 per 100,000 compared to 22.4 per 100,000 through the primary health system. Almost 95 percent of the cases were cured as opposed to 88.5 percent through the primary health system. The proportion of contacts examined was almost 30 percentage points higher through the project, but the proportion of treatment noncompliance was also slightly higher (5.2 percent through project vs. 3.1 percent through the primary health system) (Oliveira 2014). The evaluation results demonstrate that using self-image cards in schools to allow students to examine themselves for

symptoms of leprosy is likely more effective in identifying and treating the disease among children less than 15 years old and their families than through passive case detection in the primary health care system. Increased early detection can drastically reduce the

cases of disfigurement and disability caused by leprosy. Based on this experience, the Brazilian government has decided to integrate the use of self-image cards for diagnosing leprosy into school health programs nationwide.

**Table 9** • Comparison of Key Leprosy Indicators in RMA, Before and After Recife Demonstration Project.

Indicators	Comparison	Jaboatão	Olinda	Recife
Detection rate of new cases per 100,000 inhabitants in the population under 15 years old ( Recife 2010, Olinda and Jaboatão 2011)	Prior to the project year	13.5/100,000	34.8/100,000	22.4/100,000
	Project	16.5 /100,000	151.3/100,000	419.0/100,000
Proportion (%) of cure of new cases in children under 15 years diagnosed in cohort (Recife 2010, Olinda and Jaboatão 2011)	Prior to the project year	80.9%	62.1%	88.5%
	Project	100.0%	100.0%	94.7%
Proportion (%) of contacts of cases in children under 15 years examined (Recife 2010, Olinda and Jaboatão 2011)	Prior to the project year	43.8%	89.6%	54.5%
	Project	100.0%	78.7%*	83.2%
Proportion of cases of abandonment of treatment in children under 15 year, in the cohort studied (Recife 2010, Olinda and Jaboatão 2011)	Prior to the project year	9.5%	0.0%	3.1%
	Project	0.0%	0.0%	5.2%

Source: IDB

\* Preliminary data





Know this story: **Tackling "Big Foot"** | [vimeo.com/63267428](https://vimeo.com/63267428)



Jonathan Cali, Marcello Basani, Marle Reyes, Denise S.C. Oliveira, Nancy Armenta

## Context

Guyana is one of four countries in the Americas where transmission of LF still occurs, along with Brazil, Haiti, and the Dominican Republic (PAHO 2009). The country is also believed to have a high burden of STH. Guyana is divided administratively into ten regions that are each given a number as well as a name. The capital Georgetown is situated at the mouth of the Demerara River in Region 4 (Demerara-Mahaica), which has a population of around 310,000. Although the majority of the population of Region 4 lives in the urban center of Georgetown, the region has many rural communities.

Most of Georgetown stands at or below sea level, separated from the Atlantic Ocean by a sea wall. Consequently, it is prone to severe and prolonged flooding during the rainy season. The drainage system of the city consists of wide ditches that run alongside the roads into which rain and surface water flows. The waste disposal system in Georgetown is inadequate and refuse often clogs the drainage ditches, creating large pools of stagnant water throughout the city. Populations of *Culex* mosquitos, the vector for the parasitic worm *Wuchereria bancrofti* that causes LF, breed in the standing water. Occasionally, this problem is made worse by prolonged strikes resulting from contract disputes between the government and private garbage collectors.

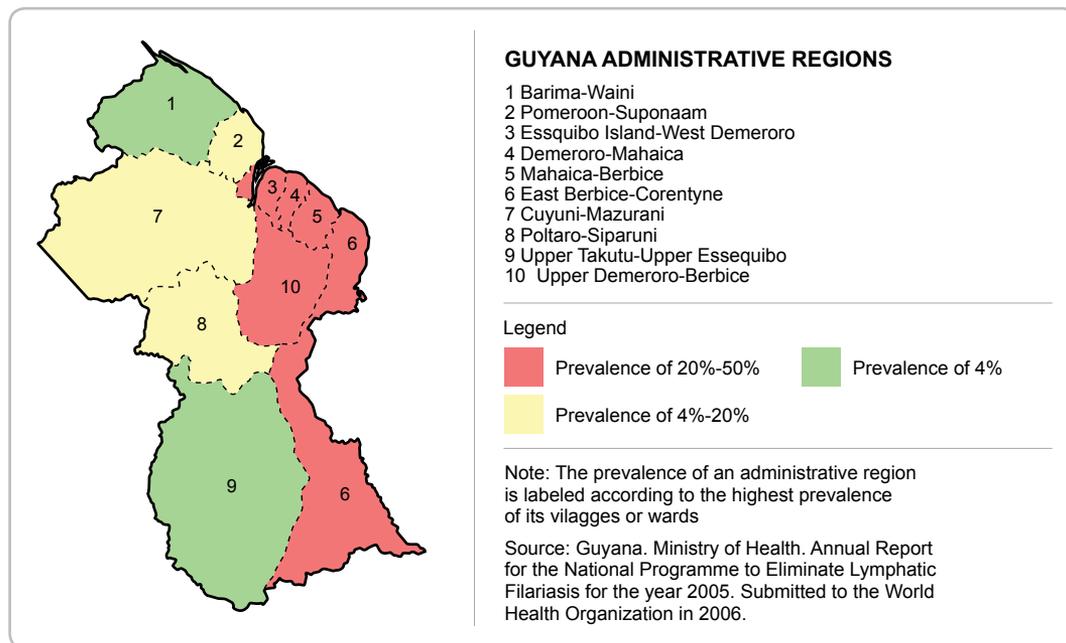
Georgetown's main sewage system was built between 1924 and 1929 and serves only 48,000 citizens in the center of the city. With the exception of two other areas

covered by smaller sewer networks, the remaining population of Region 4 uses septic tanks and pit latrines for wastewater disposal. Poorly maintained sewage systems and septic tanks cause frequent wastewater overflows into the drainage ditches and back-ups onto streets and backyards, creating an environment where LF and STH can be transmitted easily (IDB 2011).

Guyana's effort to eliminate LF began in 2001 with a program that imported salt fortified with DEC to be sold to consumers by the private sector for use in food preparation and seasoning. By 2008, LF prevalence had declined in some regions but transmission of the disease had not been interrupted. Pilot programs that provided MDA of DEC and albendazole for LF control were carried out in 2008 in Region 5, and in Regions 2 and 6 in 2009, but no MDA activities for LF or STH had been conducted in Region 4.

The Guyana demonstration project examined in this book, which is a component of the IDB funded "Georgetown Sanitation Improvement Project" (GSIP), seeks to eliminate LF as a public health problem in Region 4 and control STH through an integrated approach that combines sanitation improvements to prevent infections with MDA to treat existing infections, in addition to a social mobilization campaign to build public awareness of LF and the overall project. In 2005, LF prevalence in Georgetown and the surrounding areas was between 20 and 50 percent (PAHO 2009). The prevalence of STH is not known, but is estimated to be high enough to be a serious public health problem.

Figure 9 • Prevalence of Lymphatic Filariasis in Guyana, 2005



Source: PAHO (2009)

The sanitation interventions of the project consist of infrastructure improvements to Georgetown’s sewage system and institutional strengthening of Guyana Water Inc. (GWI), the country’s public utility responsible for the construction, operation, and maintenance of the water supply and sewage systems. Additionally, the project is financing an energy efficiency program and a public awareness campaign, targeted towards schools and business owners, that teaches water conservation and proper hygiene. The health component of the project, which is being carried out in Georgetown and surrounding rural and peri-urban areas in Region 4, includes training of health center staff to manage MDA, a social mobilization campaign, the recruitment and training of compensated community drug distributors, the recording of MDA coverage data, and M&E surveys. The Loan Agreement for the financing of GSIP and the activities described above was signed between the IDB and government of Guyana in 2010. The first of five rounds of MDA was conducted in 2012, and health-related activities are expected to end in

2017. Because the project is ongoing, the management structure and implementation plan are periodically altered in order to improve the project’s operations and increase its impact. This book analyzes the project as it was originally designed and also takes into account subsequent improvements that have been made.

### Purpose of Integration

This demonstration project seeks to integrate activities across the health and water and sanitation sectors to eliminate LF and control STH through a comprehensive approach. Improvements to the sewage system are envisioned to reduce risk factors for these diseases such as stagnant wastewater and drinking water contamination in Georgetown. The integrated distribution of DEC and albendazole to treat both LF and STH through repeated MDA campaigns will cure infection and thus reduce transmission of the parasites. In addition, the combined distribution should allow for cost and time savings, compared to parallel programs, through the reduction of personnel

needs, administrative tasks, and coverage monitoring. Furthermore, joint educational campaigns between the water and sanitation and health sectors have begun to teach school children about LF transmission and its risk factors, in addition to general conservation and hygiene practices, which should produce additional health benefits and cost savings.

## Integration of Project Components

### Management

The Guyana demonstration project materialized as a result of mutual interests between the LAC NTD Initiative and the Guyana MOH. In 2009, the LAC NTD Initiative was promoting an integrated approach to disease control that combined the efforts of the health and water and sanitation sectors in order to eliminate LF from the LAC region's remaining endemic countries. Meanwhile, the MOH had begun piloting MDA programs with the intent of stopping the transmission of LF in Guyana, and the IDB and government of Guyana were discussing an agreement to provide a large loan to upgrade Georgetown's sanitation system. Activities to control STH and eliminate LF were then added to the loan as a health component.

The proposal for integrating the health component with the sanitation project was well received by the MOH, however, there was an initial resistance from GWI since the utility lacked experience managing health projects and drug distribution did not align with the company's strategic plan. However, the Ministry of Finance and GWI offered their support to the integrated project once they came to understand both the importance of sanitation improvements for reducing the spread of infectious diseases and the value of adding an MDA component to the GSIP. This support was offered with the condition that the MOH be responsible for executing the health component.

As the executing agency, GWI is responsible for coordinating the project and handling all official exchanges with IDB. GWI is tasked

with preparing annual planning documents and budgets, administering finances, and overseeing implementation of the GSIP. At the onset of the project, GWI and the MOH signed an inter-institutional agreement establishing the MOH as the sub-executing agency responsible for implementing the health component through a special LF unit coordinated by the Chief Medical Officer (CMO). The MOH was responsible for procuring goods and services, organizing the social mobilization campaign, recruiting drug distributors, and overseeing MDA in the communities. The National Oversight Committee for Neglected Tropical Diseases, a multi-stakeholder group previously established by the MOH, was intended to work closely with the project.

In practice, the coordinating mechanism described above was ineffective and has since been altered. Almost all people interviewed expressed dissatisfaction with the lack of communication between GWI and the MOH. Despite having signed an agreement, the two parties were unable to adhere to their respective responsibilities. The MOH never created the special LF unit that was supposed to implement the health component and to handle communication with GWI, something that people interviewed attributed to the MOH's limited resources and the fact that the project did not allocate funding for hiring new personnel to operate the unit. The MOH instead assigned a nurse from the tuberculosis unit to serve as the LF coordinator. Interviewees also stressed that the institutional structures of both GWI and the MOH lack designated personnel responsible for communicating and coordinating with other institutions. While the National Oversight Committee for NTDs was an active participant in the early planning stages of the project and facilitated communication between different institutions involved, including PAHO, interviewees reported that committee members have since stopped responding to meeting invitations, representing another breakdown in communications between stakeholders. Almost everyone who was interviewed expressed the need for a

functioning coordinating committee to ensure the continuation of the project.

In an attempt to improve communication between the MOH and GWI, the IDB hired a local project coordinator with experience working on previous MDA campaigns in Guyana. The project coordinator has since led a movement to decentralize implementation of the project and established a coordinating committee with representation from all stakeholders to improve the communication between them.

In order to clarify the responsibilities of each party, the project coordinator developed a new inter-institutional agreement between the stakeholders. GWI remains in charge of overseeing execution of the project and managing finances, but is also taking some responsibility for procurement and for the social mobilization campaign. The CMO is responsible for overseeing MDA activities, but other organizations such as Georgetown Public Hospital, Georgetown Municipality, and the Regional Health Officer oversee activities in health centers under their control. The health centers are responsible for the implementation of MDA, including recruiting and training distributors, packaging drugs (in areas outside of Georgetown), supervising MDA, and collecting coverage data. For MDA campaigns conducted in Georgetown, the MOH hired additional staff to package the correct dose of DEC and albendazole into Ziploc bags and prepare them for distribution.

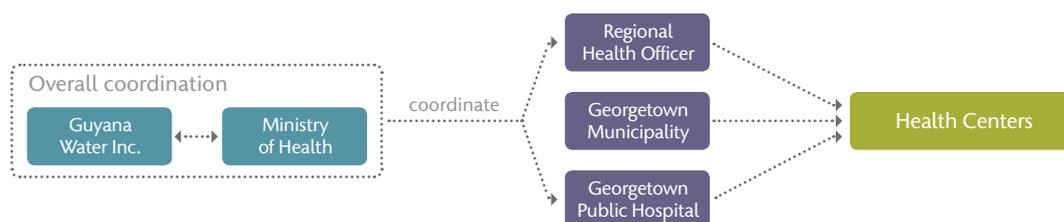
GWI is contributing a project manager, head engineer, procurement specialists, and support staff, in addition to public relations personnel who are designing and implementing the outreach campaign for the second round of MDA. PAHO hired two people with funding from the Department of Foreign Affairs, Trade and Development Canada (DFATD) to aggregate and digitalize reports from the community health centers. In addition, PAHO health specialists and support staff have been providing technical assistance throughout the course of the project. IDB directly hired and supervises the project coordinator, who serves as a

link between participating stakeholders and provides managerial support to the CMO. GWI, however, is anticipating absorbing this coordinator into its staff, where he will maintain his current responsibilities.

In the first MDA round, the MOH directly recruited drug distributors from Georgetown and transported them to communities outside of the capital on the day of the distribution. According to one interview respondent, the community health clinics had also recruited and trained their own distributors to conduct MDA in the same areas, and were surprised when they were replaced by the MOH's distributors. The respondent claimed that many people in her community refused to accept medication from distributors whom they did not recognize. For ensuing rounds of MDA, local residents are being recruited by regional health centers in coordination with the MOH to distribute drugs in their own communities. Health center staff identifies community members who are literate and provides them with a contract to engage in pill distribution activities. Health center staff and nurses supervise distributors, but the distributors are paid by the MOH with project resources and with a PAHO contribution.

DEC was procured for the treatment of LF. With the support of PAHO, the MOH received a five year donation of albendazole from GlaxoSmithKline to treat both LF and STH. The MOH was also responsible for procuring all materials for the social mobilization campaign. At the request of the MOH, GWI successfully procured 1,000 ICT cards for diagnosing LF. For the second round of MDA, the 2013-2014 inter-institutional agreement divides procurement tasks between the MOH and GWI. GWI is responsible for procuring TV, radio, and newspaper ads, posters, and banners for the social mobilization campaign, as well as bags, t-shirts, and pens for drug distributors, Ziploc bags, and the Post-MDA validation survey. Meanwhile, the MOH is responsible for acquiring drugs and training manuals and developing the "key messages" for the social mobilization campaign.

Figure 10 • Management Structure of Guyana Demonstration Project



Source: Authors

Through the first round of MDA, the management component of the Guyana demonstration project would be classified as *linked* according to Shigayeva et al. (2010)'s framework. On paper, GWI and the MOH agreed to their respective responsibilities for implementing the project, but in practice there was no official PCU through which the two institutions could communicate and coordinate actions. Each organization managed its own staff and there were no personnel spanning both sectors. Within the health sector, however, management of STH and LF control activities were highly integrated.

The management component can currently be classified as *coordinated*. Although both GWI and the MOH signaled that they would prefer to manage the different aspects of the project completely separate from one another, both acknowledge the importance of health and sanitation interventions for controlling and eliminating NTDs. The project coordinator now works directly with both sectors, and the new committee of stakeholders is showing promise for improving communication and coordination. The new inter-institutional agreement formalizes the responsibilities of each stakeholder and further integrates the project into the primary health care system by increasing involvement of community health centers. Finally, the procurement of supplies and materials for both the health and sanitation aspects of the project are now primarily under the control of a single entity, GWI.

## Financing

The Guyana demonstration project is financed as a component of a larger loan from IDB to GWI for the implementation of the GSIP. An interviewee revealed that the funding allocated to the health component was less than the amount required for its implementation. This may have been a result of the fact that the initial budget had already taken into account partnerships with other organizations that did not materialize. PAHO financing has been instrumental in filling funding gaps. PAHO financed the printing of training manuals, the training of drug distributors and health workers, logistical support during MDA, and the digitalization of health center data with support from DFATD. GWI receives biannual loan disbursements directly from IDB and distributes them to the MOH based on quarterly budget projections for the health component of the program. PAHO's contribution is disbursed to the MOH.

The financing component of the project is *linked*. Three organizations are making financial contributions to the project. GWI administers all funds from IDB for both the health and sanitation aspects of the project and funds are distributed from GWI to the MOH through formal mechanisms, but the funding from other institutions is administered separately and used for specific activities.

## Implementation

Implementation of the Guyana demonstration project involves personnel from various disciplines and backgrounds. Engineers, project managers, and sanitation specialists are working on the sanitation infrastructure aspects of the GSIP, while nurses, community drug distributors, and health officials are responsible for implementing the health component.

Since the inception of the project, four responsibilities have been newly integrated between the sanitation and health sectors. Initially, materials for both sectors were procured separately by the MOH and GWI. For the second round, most purchasing is the responsibility of procurement officers from GWI. In addition, GWI's public relations team has taken on responsibility for the social mobilization campaign, meaning that all communications activities for both sectors are being consolidated in one institution, and the new project coordinator works directly with both the sanitation and health sectors. Finally, GWI conducts school visits to educate students about hygiene and water conservation. On several occasions, the project coordinator has accompanied conservation and hygiene educators to teach LF prevention in schools. Representatives from IDB, GWI, and the MOH all stated that combined LF, conservation, and hygiene education has the greatest potential for integrating activities between the two sectors.

The project does not employ separate LF and STH staff, and most people contributing to the health component are part of the primary care infrastructure. Community distributors hand out drugs for STH and LF in a single integrated campaign. Health centers in Georgetown receive drugs prepackaged in Ziploc bags, while outside the capital, community distributors package the drugs before each round. Each health center organizes the MDA in a manner that best fits the local context. For example, at one health center in Georgetown, distributors sent from the MOH and clerks from the center paired up with local nurses to visit each house

in the neighborhood over the weekend, while at another health center in East Coast Demerara, a peri-urban area outside Georgetown, distributors were recruited from the local community. Despite the extra work required, informants reported that overall, health center staff was well-motivated to participate in the campaigns.

All community distributors were trained before taking part in MDA campaigns. Head nurses from each health center, the project coordinator, the LF Supervisor, and PAHO are overseeing and implementing the training, with help from health center staff. In half-day sessions, distributors are informed about the transmission, symptoms, prevention measures, and treatment of LF and STH. They are also instructed in how to distribute the medication, the proper manner of interacting with residents and answering their questions, how to respond to adverse side effects of the drugs, and how to record treatment data. All training sessions were aided by a standardized manual created by the MOH and printed by PAHO. Some head nurses thought that they were given too little time to train distributors before the start of the campaigns, especially for those who had to travel to train distributors in several different communities. Another said that although distributors were given a great deal of information to digest, they were able to understand most of the material and they benefited from having manuals and short refresher sessions to supplement their initial training. Furthermore, the LF supervisor and the project coordinator accompanied distributors in some neighborhoods in order to answer questions and monitor the implementation of the campaigns. Starting with the second MDA round, distributors will receive certificates verifying their completion of training. One person interviewed suggested that educating residents on environmental risk factors, such as the potential for *Culex* mosquitos to breed in open water tanks, could also be integrated into MDA.

Prior to the first round of MDA, the MOH contracted an outside firm to design the social mobilization campaign, which was

intended to educate the public about LF and inform them of the impending mass drug distributions, in order to build trust and confidence within the community and increase participation. The firm created posters featuring a soccer player and broadcasted television and radio advertisements. Almost all interviewees shared the belief that the campaign was inadequate, with some naming lack of funds, delays in approving ads and materials, and the fact that it was not rolled out until just three days before the start of MDA. The ineffectiveness of the campaign meant that many residents were not aware that medication was being distributed in their neighborhoods. People involved in the distribution revealed that residents in some areas were highly suspicious of the operation and feared that the government was trying to sterilize or kill them. Some people simply refused to take drugs without a health worker present, which led health centers to deploy nurses to accompany community distributors during MDA, while others required lengthy explanations from distributors before agreeing to comply. An interviewee suggested that a stronger outreach campaign would reduce the amount of time needed to explain the project, thus enabling distributors to visit more homes. Several people interviewed recommended working with faith groups and asking them to inform their members of the campaign and even to distribute medication themselves.

For the remaining MDA rounds, the task of implementing social mobilization campaigns will fall to GWI's public relations team. The campaigns are planned to begin one month before each round, and will include newspaper and prime time television and radio advertisements, in addition to announcements by a traditional "bell-crier" in rural communities. Community meetings will be organized by regional sub-coordinators in order to engage local political, civic, and religious groups, and residents will be encouraged to spread information about LF and news of the MDA by word of mouth. GWI representatives expressed that the company is prepared to

assume responsibility for social mobilization, but that the additional workload will be challenging for their team.

During the first round of MDA, the implementation of the project was *linked*. Health and sanitation staff worked only on activities in their own sectors, and public relations responsibilities were not sufficiently coordinated. MDA, the social mobilization campaign, and the training of distributors were highly integrated between LF and STH, but there was little effort to incorporate hygiene and sanitation education into these activities. Likewise, only in a few isolated cases did educational workshops conducted by GWI attempt to teach students about LF or other health topics.

After the first MDA round, implementation can be considered *coordinated*. The roles of most staff members are still divided by sectors, but most procurement and public relations activities for the entire project are now the responsibility of specialized teams within GWI. The primary health care system has become more involved in the project, with nurses from primary health centers taking on major roles in implementing the training sessions and distributing drugs in their communities. Furthermore, GWI is beginning to integrate LF education activities into conservation and hygiene workshops more frequently.

### **Monitoring and Evaluation**

GWI is responsible for overseeing M&E of the health component, with support from the project coordinator. MDA coverage, beneficiaries' knowledge of LF and STH and their attitudes towards mass drug distribution, and LF and STH prevalence and intensity are the primary indicators for the project. Community drug distributors use standardized data sheets to record coverage information during MDA campaigns. They record demographic information, reasons residents refused to participate, and the names of those who were not home at the time. Some health centers aggregate the data collected, while others pass it directly to the LF supervisor in the MOH and to the

project coordinator. The project coordinator prepares monitoring reports and distributes them to relevant stakeholders. PAHO clerks digitize the data and share it with the MOH and the project coordinator. In order to simplify data collection and management, the project intends to train health center staff to aggregate coverage data and upload it to an Excel spreadsheet. After each MDA round, a validation survey is conducted by an independent organization to verify the coverage data reported by drug distributors.

An initial KAP survey was conducted before the first round of MDA to measure the degree to which residents understand the transmission mechanisms and symptoms of LF and STH. The KAP baseline found that while 86 percent of respondents had heard about LF, only 40 percent knew key facts about the disease (Oliveira and Armenta 2013c). Follow-up surveys after the third and fifth rounds of MDA will be used to assess the effectiveness of the social mobilization campaigns in educating the population and increasing adherence to MDA, and will ask for the reasons why respondents did or did not accept the medication. KAP surveys were and will be conducted at two sentinel sites in Region 4, one in Georgetown, and another outside the capital. PAHO is responsible for reviewing the survey and entering responses into a data management system.

In order to monitor the status of LF infections in the area, medical technologists and laboratory technicians conducted an LF prevalence survey at one of the sentinel sites after the second round of MDA. The results of this survey are presented below. A Transmission Assessment Survey (TAS) will be conducted after the fifth round of MDA to assess the final prevalence of LF at the

sentinel sites. If the prevalence is found to be less than 1 percent, the MDA campaign will be discontinued, while prevalence greater than 1 percent will require an additional two rounds of MDA.

The M&E component of the Guyana demonstration project is considered to be *coordinated*. Community distributors record coverage data for both diseases during the MDA campaign on a single, standardized form. The same indicators, namely prevalence and intensity, are used to measure the burden of both diseases. The primary health care system, through the nurses and community health centers, was also involved in M&E activities. M&E cannot be classified as integrated because there was little opportunity for joint monitoring with the sanitation sector. Moreover, M&E activities are being conducted by a variety of independent organizations, including the National Public Health Reference Laboratory for the LF prevalence survey, the Red Cross for the first post-MDA, and the Volunteer Youth Corps for the first KAP survey.

### **Project Results**

The second round of MDA in Guyana covered 64.4 percent of the target population at the sentinel site, an increase in 19.7 percentage points from the first round (44.7 percent coverage). A preliminary survey at one sentinel site found the prevalence of LF to be 3.6 percent.<sup>17</sup> Previous figures suggest that LF prevalence in Georgetown and the surrounding areas was between 20 and 50 percent in 2005 (PAHO 2009).

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<sup>17</sup> Preliminary data, evaluation report not published at time of publishing of this book.

Table 10 • Integration of Guyana Project Components

Components	Elements	Before 1st Round		After 1st Round		Overall Current Integration
		Level of Integration	Justification	Level of Integration	Justification	
Management	Political will	Linked	Reluctance in sanitation sector to manage health project.	Linked	Both sectors prefer to manage components separately.	Coordinated
	Project coordinating unit	Linked	Diseases were integrated within the MOH. However, there was a lack of coordination and communication between the MOH and GWI, although a memorandum of understanding was signed.	Coordinated	Project coordinator, new committee, new inter-institutional agreement.	
	Planning and operations	No interaction	In practice, little communication between sectors or with primary health care.	Linked	Project coordinator, new committee, new inter-institutional agreement, new integration with primary health care through health centers. However, it is still too early to tell how well the new arrangements will work.	
	Human resource management structures	No interaction	GWI, MOH, PAHO, health centers all manage different staff for different purposes. Same staff within each agency works with both LF and STH.	Linked	More coordination among staff. New project coordinator works directly with both sectors, MOH pays distributors managed by health centers.	
	Administration of supplies/ materials	Coordinated	Agreement stated which institution procured which items.	Integrated	GWI procures most supplies and materials.	
Financing	Funding source	Linked	Funders include IDB, PAHO, DFATD.	Linked	Not changed after 1st round	Linked
	Administration of finances and payments	Linked	GWI administers funds from IDB, and MOH administers PAHO funds. Most used for specific activities, little pooling.	Linked	Not changed after 1st round	

<b>Implementation</b>	Division of labor	Linked	Staff separated by sectors, but integrated between diseases.	Coordinated	Procurement, communications, project coordinator now integrated. Primary care staff used for drug distribution.	<b>Coordinated</b>
	Training and capacity building	Linked	Integrated among diseases, but little mention of sanitation in manuals.	Coordinated	Primary care health centers took on major role in administering training.	
	Distribution and use of supplies/materials	Linked	Joint MDA, separate social mobilization for sanitation and health sectors, primary care not involved.	Integrated	Social mobilization integrated, primary health staff role in distribution, integrating LF and water/sanitation education.	
<b>Monitoring and Evaluation</b>	M&E systems	Coordinated	Coverage data, KAP for both diseases. But different organizations collecting data.	Coordinated	Not changed after 1st round	<b>Coordinated</b>
	M&E strategy	Coordinated	Little opportunity for integration with sanitation sector. Overseen by GWI and project coordinator, as stipulated in inter-institutional agreement.	Coordinated	Not changed after 1st round	
	Data management	Integrated	KAP and coverage data managed by PAHO, primary health workers used to aggregate data and send it to MOH.	Integrated	Not changed after 1st round	





Know this story: **Unity creates strength** | [vimeo.com/104748155](https://vimeo.com/104748155)



Jonathan Cali, Meri Helleranta, Denise S.C. Oliveira, Nancy Armenta

## Context

Haiti has the highest burden of LF in the LAC region, with almost 9 million people at risk of contracting the disease in 2010. STH prevalence is also very high throughout the country, with approximately 34 percent of the population infected with STH at the start of the demonstration project. In the capital Port-au-Prince, between 10 and 45 percent of the population were reported in 2001 to be infected with LF, while the prevalence of STH of the *Ouest* department, where Port-au-Prince is located, stood at 25 percent in 2002 (MSPP 2013). Widespread infection of STH among children is exacerbating the high level of chronic malnutrition, which was estimated to affect 22 percent of Haiti's children under five years old in 2012.<sup>18</sup>

Haiti's poor sanitation infrastructure and lack of potable water are major risk factors for LF and STH. Nationwide, only 9 percent of households are estimated to have piped water. About 87 percent of urban residents and 47 percent of rural residents have access to an improved water source (tap water, protected spring or well, covered cistern for rainwater collection, bottled water), while 8 percent of rural residents still rely on rivers and lakes as their main source of water.<sup>19</sup> The

sanitation situation is just as alarming. Only 26 percent of the population has access to improved sanitation, the country has no sewer systems, and more than 40 percent of rural residents<sup>20</sup> have to resort to open defecation.<sup>21</sup>

The Haitian government and international partners have attempted to address NTDs primarily with MDA and improvements to the water and sanitation system. Efforts to combat LF began in 2000 with the launch of the *National Program for the Elimination of Lymphatic Filariasis* which resulted from a partnership comprised of the Haitian Ministry of Public Health and Population (MSPP), the University of Notre Dame (UND), IMA World Health (IMA), the Bill & Melinda Gates Foundation, and the U.S. Centers for Disease Control and Prevention (CDC). After scaling up gradually in its first few years of operation, PNEFL was disrupted in 2005 due to political unrest and lack of funds (Jean-Francois and Anderson 2009), and again in 2010 due to the massive earthquake that devastated the country.

In an effort to address the NTD burden in a sustainable and integrated manner, the LAC NTD Initiative's activities in Haiti employ the WASHED strategy: Water And

<sup>18</sup> Haiti Mortality, Morbidity and Service Utilization Survey (EMMUS-V), <http://www.haitilibre.com/images/SR199.eng.pdf>

<sup>19</sup> The remaining 45 percent of rural residents rely on other "unimproved" water sources, including unprotected wells and springs, uncovered tanks or cisterns, and tanker trucks or carts. WHO/UNICEF Joint Monitoring Programme (JMP) for Water Supply and Sanitation, [http://www.wssinfo.org/documents-links/documents/?tx\\_displaycontroller%5Btype%5D=country\\_files](http://www.wssinfo.org/documents-links/documents/?tx_displaycontroller%5Btype%5D=country_files).

<sup>20</sup> 47 percent of Haiti's population are considered to be rural dwellers.

<sup>21</sup> WHO/UNICEF Joint Monitoring Programme (JMP) for Water Supply and Sanitation, [http://www.wssinfo.org/documents-links/documents/?tx\\_displaycontroller%5Btype%5D=country\\_files](http://www.wssinfo.org/documents-links/documents/?tx_displaycontroller%5Btype%5D=country_files).

Sanitation, Hygiene and Health Education, Environmental changes, Deworming. There are essentially five operations in the IDB portfolio that finance interventions against NTDs in Haiti that include some combination of water and sanitation improvements, MDA for STH and LF, and education and social mobilization campaigns. Building on the previous progress of PNEFL, two of these IDB projects support UND's efforts to distribute albendazole and DEC to treat LF and STH in Port-au-Prince. One of them is linked to an IDB water and sanitation infrastructure project, funds drug distribution conducted by UND, and aims to strengthen the *Autonomous Metropolitan Water Company (CAMEP)* and *National Bureau of Water and Sanitation (DINEPA)*, the public institutions responsible for safe water and sanitation provision. The second project, financed by the PepsiCo Foundation, provides funding for maintaining the MDA campaigns in Port-au-Prince.

Two other IDB water and sanitation projects include components to fight NTDs, with one targeting the "intermediate" cities of Saint-Marc, Port-De Paix, Les Cayes, Jacmel, Ouanaminthe, and Cap-Haitien, and the other aimed at the department of Artibonite. These projects are addressing STH by improving water and sanitation infrastructure, providing handwashing stations, and supporting MSPP to implement deworming campaigns. For the project being conducted in the intermediate cities, sanitation interventions include the installation of private and collective sanitary systems, the creation of norms for managing excreta, support to municipalities for maintaining storm drainage systems and the use of PPPs for waste collection and transport. The project is also expanding access to potable water by rehabilitating distribution systems, constructing municipal water networks, and installing public standpipes, which allow community members to buy buckets of clean water at a very low cost. Additionally, this project provides technical assistance to DINEPA and regional water and sanitation offices (OREPAS) to improve their ability to manage and regulate the sector. MSPP's

MDA campaign for STH is being conducted biannually and distributes medication to children aged two to 12 in schools, health centers, and outreach stations. The Haiti demonstration project technically finances only one round of MDA per year, while other PNEFL partners finance the second round.

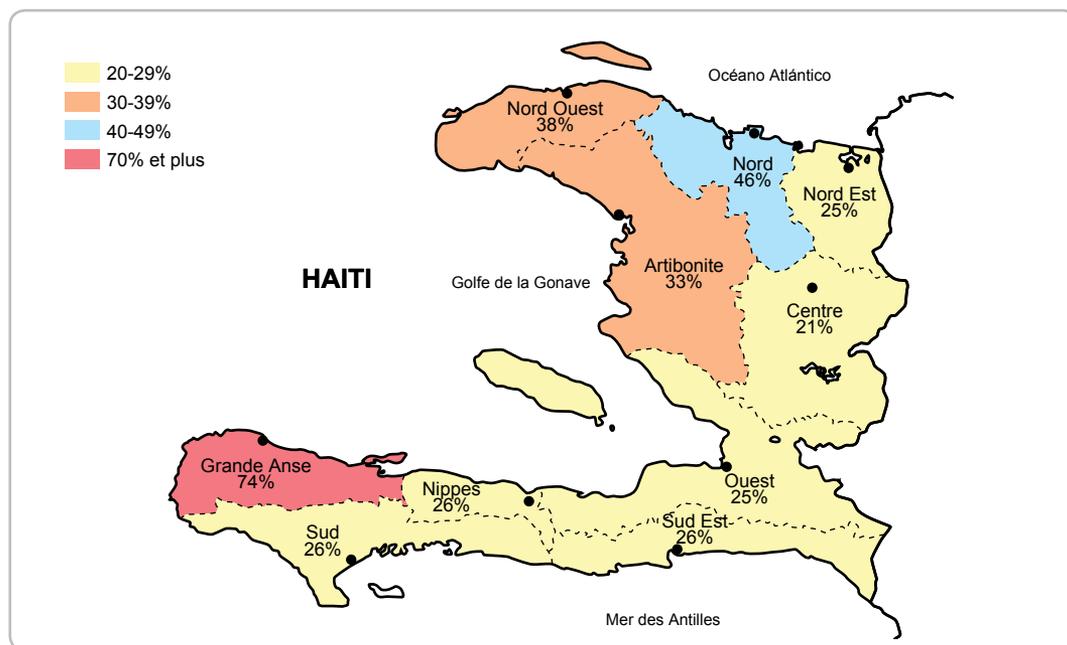
In the rural areas of the department of Artibonite, approximately half of the population does not have access to potable water and 85 percent does not have access to sanitation (IDB 2009). The water and sanitation components of the Artibonite project include the establishment of community-based water committees that make decisions regarding which types of water and sanitation systems they would like in their villages, and on how revenue will be collected and used to maintain the systems. The project is also funding well drilling, pump and tank installation, construction of spring intake structures, installation of public fountains and some home connections, construction of sanitation systems, and ongoing technical support. The deworming campaigns are being implemented by MSPP in a similar manner as in the intermediate cities.

A fifth IDB project is providing integrated child health services through biannual national campaigns called "Child Health Weeks (CHWs)," which are distributing medication for STH along with vitamin A, iodine, and zinc supplements, oral rehydration salts, "catch-up" vaccines for children under five, and breastfeeding promotion materials for mothers.

### **Purpose of Integration**

LAC NTD Initiative projects in Haiti are deploying water and sanitation interventions to reduce the risk factors for LF and STH, such as stagnant water where mosquitos breed and drinking water contaminated with human waste. MDA is treating existing infections and thus reducing spread of the parasites, while education campaigns are being used to both inform people of the MDA

Figure 11 • Prevalence of STH in Haiti in 2002, by Department



Source: Data from De Ribes et al. (2005)

campaigns and teach hygienic practices, which can increase the effectiveness of MDA. While the interventions financed by the PNEFL partners distribute only DEC and albendazole, the CHWs project uses a single distribution system to provide more comprehensive services to children and pregnant mothers, resulting in financial savings for project implementers and time savings for beneficiaries. Combining different health services also reduces the number of campaigns that must be organized each year, thus minimizing disruption of routine primary health care services. Furthermore, STH treatment complements nutrition programs by ensuring that children are not competing with parasites for the absorption of important vitamins and minerals. Finally, by combining NTD control and elimination interventions with water and sanitation projects, some of the attention and resources garnered by large infrastructure projects can be leveraged to attract more funding for MDA and other needed health interventions.

## Integration of Project Components

### Management

The NTD projects supported by the LAC NTD Initiative have benefited from the strong commitment of a wide range of partners to assist the MSPP with combating Haiti's severe NTD burden, including United Nations organizations, bi-lateral partners (Brazil, Cuba), NGOs and the IDB. Planning and implementation of the projects have also required political support from both the water and sanitation and the health sectors. DINEPA is responsible for executing one of the LAC NTD Initiative projects in Port-au-Prince, and for executing the projects in the intermediate cities and in rural Artibonite. UND executes the project financed by PepsiCo Foundation in Port-au-Prince and is contracted by DINEPA to conduct MDA for the other Port-au-Prince project. MSPP is under agreement with DINEPA to implement deworming activities in the intermediate cities and in Artibonite, with support from IMA. MSPP also executes and implements

**Table 11** • Summary of Projects Supported by LAC NTD Initiative in Haiti

Project	Years	Location	Executing agency	Diseases	Target population	IDB/ Government/ Other Financing (US\$)	NTD components	Intersectoral components
Port-au-Prince Water and Sanitation Project	5	Metropolitan area of Port-au-Prince	DINEPA-UND	LF, STH	200,000 eligible individuals per MDA round	500,000	<ul style="list-style-type: none"> <li>♦ MDA (including baseline from sentinel sites and spot checks )</li> <li>♦ Social mobilization (KAP survey undertaken every three years, as per UND &amp; MSPP agreement)</li> <li>♦ M&amp;E</li> </ul>	<ul style="list-style-type: none"> <li>♦ Water and sanitation including institutional strengthening</li> </ul>
Port-au-Prince, PepsiCo Foundation	2	Metropolitan area of Port-au-Prince	UND	LF, STH	700,000 eligible individuals per MDA round	500,000 (PepsiCo)/ 500,000 (UND)	<ul style="list-style-type: none"> <li>♦ Same as above</li> </ul>	<ul style="list-style-type: none"> <li>♦ Water and sanitation</li> </ul>
Intermediate cities	5	Saint-Marc, Port-De Paix, Les Cayes, Jacmel, Ouanaminthe, Cap-Haitien	DINEPA-MSPP	STH	200,000 children aged 1-15 and pregnant women per MDA round	890,000	<ul style="list-style-type: none"> <li>♦ MDA (school based, to complement CHW coverage)</li> <li>♦ Social mobilization</li> <li>♦ M&amp;E, including assessment of STH prevalence among school-aged children targeted by the project</li> </ul>	<ul style="list-style-type: none"> <li>♦ Water and sanitation with focus on expansion of potable water coverage</li> <li>♦ Ministry of National Education and Professional Development (MENFP) is a key partner in the implementation of school-based deworming</li> </ul>
Rural Sanitation	5	The department of Artibonite	DINEPA-MSPP-IMA	STH	72,000 children aged 1-15 and pregnant women per MDA round	500,000	<ul style="list-style-type: none"> <li>♦ Same as above</li> </ul>	<ul style="list-style-type: none"> <li>♦ Water and sanitation with focus on expansion of potable water coverage and community outreach</li> </ul>
Child Health Weeks	4	Nationwide	MSPP	STH	996,000 children (12-72 months), and 336,000 pregnant and lactating women by end of the 3rd year	5,500,000	<ul style="list-style-type: none"> <li>♦ Child Health Weeks (total five rounds) – Albendazole distribution among children under 5</li> </ul>	<ul style="list-style-type: none"> <li>♦ Inter programmatic integration within basic health package, including promotion of breastfeeding, treatment of severe acute malnutrition, and micronutrient fortification</li> </ul>

Source: Author

the CHWs. The MENFP is a key partner in the implementation of school-based deworming, and each implementing partner coordinates with the MENFP's Directorate for School Health with regards to the interventions in their respective target areas. MENEFP must give its consent and school directors need to be informed prior to each round of MDA.

Despite their distinct policies and interests, all stakeholders have agreed since the onset of the projects in 2012 that NTDs are a problem that requires immediate attention in Haiti, and that a comprehensive approach involving sanitation improvements, education, and MDA would be the most effective way to address the issue. The Minister of Health and MSPP have shown considerable political support for the projects. NTDs and other health issues are naturally not among the core competencies of DINEPA, and it often requires substantial justification before approving MSPP's plans of operations and budget requests. Nevertheless, officials from MSPP report that DINEPA representatives attend project meetings as observers, are open to learning more about the link between water and sanitation and health, and actively collaborate with MSPP.

Despite the multitude of organizations involved in the Haiti NTD projects, there is no stakeholder committee or single institution officially responsible for coordinating actions among the various actors. MSPP and PNEFL partners convene NTD meetings twice a year, and these are important forums for coordination. At the onset of the project, MSPP also held several meetings with DINEPA and UND to negotiate agreements regarding the timing of the interventions and to avoid overlap of drug distribution. Yet from MSPP's perspective, there is a need for improvement in the coordination and communication with many of the vast number of international organizations and NGOs that finance and implement other STH programs in Haiti. The lack of communication can lead to duplication of activities, geographical overlap of MDA, and contamination of impact evaluations in some regions.

At MSPP there are two directorates that oversee NTD interventions, the Coordination Unit for Infectious and Transmissible Diseases and the Directorate for Family Health, which is also responsible for child health. In practice, both UND and IMA (the main implementing partners of PNEFL) manage their programs in close collaboration with the Coordination Unit or Infectious and Transmissible Diseases, whereas the Directorate for Family Health implements the CHWs and the STH campaigns financed by DINEPA using the MSPP's established systems and staff for management, logistics, and accounting. Lack of communication between the two directorates within MSPP initially complicated the execution of the interventions. Furthermore, the lack of capacity and resources of the public health system in Haiti, such as the shortage of personnel at the Directorate for Budgets and Administration, has caused significant delays in the execution and organization of the MDA and social mobilization campaigns.

All MDA campaigns are using paid drug distributors recruited from the local communities. IMA and UND are responsible for recruiting and organizing distributors in their respective regions of work. IMA uses approximately 19,000 drug distributors nationwide (excluding Port-au-Prince), while UND uses 9,000 distributors to provide MDA for LF and STH in Port-au-Prince. An additional 84 community leaders, supervised by MSPP, work with temporary health promoters to recruit distributors and implement the social mobilization campaign in Port-au-Prince. Similarly, MSPP recruits and oversees about 1,500 temporary staff and 50 to 60 supervisors to conduct the biannual CHWs throughout the country (Oliveira and Armenta 2013a). Each organization involved in the project hires and supervises its own staff members in coordination with regional water and sanitation authorities.

While MSPP is responsible for logistical organization of the STH control projects in the intermediate cities, the department of Artibonite, and for the CHWs, many organizations are contributing supplies and

materials. For example, UNICEF provides vaccines and the World Food Programme and the Micronutrient Initiative provide nutritional supplements distributed during the CHWs. PAHO acquires albendazole for STH treatment, which is donated by GlaxoSmithKline.

UND is responsible for the acquisition and management of materials for the project in Port-au-Prince and receives donated supplies from CDC, PAHO, and Abbott Laboratories. CDC and PAHO provide drugs to treat LF and STH, and the medications are stored in *PROMESS*, the MSPP's central drug storage system managed by PAHO. Other partners include RTI International, USAID, Hospital Sainte Croix, and Digicel.<sup>22</sup> MSPP's Directorate for Health Promotion and Communications is responsible for the production of all materials used in the hygiene education and social mobilization campaigns.

The management of NTD activities in Haiti can be classified as *linked* according to Shigayeva et al. (2010)'s framework. All stakeholders appear to agree on the integrated strategy for combating NTDs, and the MSPP plays an active role in setting policy and directing the various organizations implementing the projects. While there is no official coordinating committee to guarantee open communication among actors, DINEPA does have an observer role in the planning and the management of health activities. In each region, different implementers plan activities based on the challenges faced in that locale. Each individual organization hires and supervises its own staff and there is little opportunity for interaction between staff from the water and sanitation and health sectors. Supplies used for the projects are acquired and stored in an impromptu manner through in-kind donations from a variety of institutions.

## Financing

The LAC NTD Initiative's operations in Haiti are financed by five separate IDB projects. All funding is provided in the form of grants from the IDB, the Government of Spain's Spanish Cooperation Fund for Water and Sanitation in Latin America and the Caribbean, and the PepsiCo Foundation. As previously mentioned, in-kind donations, technical support, and grants provided by other institutions such as UND, USAID, WHO, CDC, the World Food Programme, The Bill & Melinda Gates Foundation, the Micronutrient Initiative, PAHO, and UNICEF are used to complement the funding provided through IDB projects. The massive human tragedy caused by the 2010 earthquake and its aftermath has greatly exacerbated the challenge and expense of implementing MDA, and accordingly many organizations have ramped up their operations in Haiti. Haiti remains highly dependent on external funding for health service delivery, and in this resource-constrained situation the pooling of funds from many donors is necessary to meet the financial needs of the NTD projects.

For three of the LAC NTD Initiative's projects in Haiti, DINEPA is the executing agency. It receives funds directly from the IDB and disburses them to MSPP and UND based on the requests of their six month implementation plans. Subsequent payments require the submission of the results from the previous intervention. UND is the executing agency for the PepsiCo Foundation's technical assistance grant to the Port-au-Prince project and hence receives the funding directly from IDB and is responsible for its administration. MSPP administers the financing for the CHW operation.

The financing of the Haiti NTD projects is classified as *linked*. Activities are funded through five separate IDB projects, implying

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<sup>22</sup> "Haiti is Saying Goodbye to Lymphatic Filariasis, In Spite of Earthquake," U.S. Centers for Disease Control and Prevention, <http://blogs.cdc.gov/global/2013/06/14/haiti-is-saying-goodbye-to-lymphatic-filariasis-in-spite-of-earthquake/>.

separate agreements, grant administration processes, and pools of money. Funding and in-kind donations come from many sources, but many of the funders have created formal partnerships. Three separate organizations in Haiti (DINEPA, MSPP, UND) manage and disperse the funds.

## Implementation

The implementation of the Haiti NTD activities varies by project and location. In Port-au-Prince, UND organizes and supervises annual MDA campaigns in close collaboration with MSPP. Distributors go from house to house to simultaneously distribute albendazole and DEC to treat both STH and LF in all residents except pregnant women, children under two years old, and the severely ill. Health professionals from UND and MSPP supervise the distributors. The first round was conducted in January and February 2012 and covered 778,381 people, or 84 percent of the eligible population, and the second round was conducted in March and April 2013 and covered 63 percent of the population (Oliveira and Armenta 2013a).

A social mobilization campaign is conducted two to three months before each MDA round. The campaign's objective is to attain high levels of treatment adherence and MDA coverage by mobilizing the targeted community. The population is educated about LF, its transmission, the clinical effects, and the benefits of treatment. The community is also informed of when the campaigns are to take place by health promoters, who use media interviews, banners, posters, pamphlets, outreach to religious organizations, sketches, songs, raffles, and an open telephone line to provide information about the intervention. Additionally, post-MDA communication reminds Port-au-Prince residents that their participation has been important, of the contributions of the MDA campaign partners, and of the follow-up actions to be conducted by MSPP. Interview respondents disclosed that the social mobilization campaign has been one of the strong points

of the projects in Haiti, and, despite its high cost, has been highly successful in achieving its objectives.

MSPP conducts MDA campaigns to control STH in the intermediate cities, and in rural Artibonite. MSPP works with IMA, local municipal governments, and MENFP to recruit and train community distributors to dispense albendazole in schools and health centers to children between one and nine years old. Three rounds have been conducted in each intermediate city and in Artibonite. The Artibonite rounds occurred in May and November 2012 and in June 2013, with 54,000 children covered in the first round and 80,500 in the second. The MDA rounds in the intermediate cities occurred in May and November 2012 and in June 2013, with the first round covering 116,000 children and the second 194,700 children (Oliveira and Armenta 2013a).

As part of CHWs, MSPP deploys 4,000 temporary outreach stations throughout the country to provide all children under five years old with Vitamin A, iodine (only during the first two years), zinc supplements, oral rehydration salts for treating diarrhea, vaccines to complete immunization schedules, and albendazole for treating STH, in addition to breastfeeding promotional materials for mothers (Oliveira and Armenta 2013a).

The training of staff and community distributors for all four projects was conducted individually by each implementing organization, but some joint training sessions were held by UND, IMA, and MSPP. Community distributors received training on how to properly distribute medication, take medical samples, and deal with any adverse effects. They received a standardized training manual for STH control activities, which was financed by IDB, MSPP, DINEPA, UNICEF, USAID, and PAHO. UND and MSPP staff received training in the COMBI technique, an evaluation tool used for measuring the effect of social mobilization campaigns.

The implementation of NTD activities in Haiti is *coordinated*. In Port-au-Prince, medication for both STH and LF is handed out simultaneously by the same community distributors. In the intermediary cities and rural villages, NTD activities are integrated into the education sector and the primary health care system through the deworming activities conducted in schools and health clinics. CHWs integrate the distribution of drugs for STH with other child health services. Staff training is primarily conducted separately by different organizations, and there is little interaction between the health and water and sanitation components of the programs.

### **Monitoring and Evaluation**

MSPP is responsible for overseeing the M&E of the Haiti NTD projects. UND and IMA also execute M&E activities on the ground in partnership with the *National Public Health Laboratory* (LNSP) and the Directorate of Monitoring and Evaluation. To plan M&E activities for the Port-au-Prince project, UND initially held monthly meetings with CDC, PAHO, and MSPP. UND currently holds meetings every six months with its partners to share the most up-to-date M&E results.

A nationally representative survey of school-age children was conducted in 2013 to assess the prevalence of STH and the water and sanitation situation in the country. Students aged six to 15 years in every department were given a questionnaire and asked for stool samples to be assessed in a laboratory using the Kato Katz diagnostic test. The questionnaire asked about how waste was being managed in the schools and the students' homes, the availability of drinking water, and the students' hygienic practices. The survey found that the prevalence of STH decreased nationwide from 34 percent in 2002 to 19 percent. In the Ouest Department, where the capital is located, prevalence decreased from 25 percent in 2002 to 9 percent, and Artibonite saw

prevalence drop from 33 percent in 2002 to 5 percent<sup>23</sup>.

To evaluate the MDA campaigns in Port-au-Prince, drug distributors record coverage at each round of administration. The project is using as a baseline data from national LF and STH studies that had been conducted several years earlier. A follow-up survey is slated to be conducted to monitor progress towards outcome targets and an MDA follow-up survey and quality control is carried out immediately after each campaign. The final evaluation of the effect of the project on LF is planned to be carried out using sentinel and spot-check sites, pre-selected areas of 500 or more people that will be sampled as a representative of the larger target area. Screening for microfilariae in positive cases will be conducted by LNSP using night-blood surveys. Data collectors also record any symptoms of LF they observe in the population.

The M&E of LAC NTD Initiative projects in Haiti is classified as *integrated*. In Port-au-Prince, both LF and STH are evaluated using the same indicators, and coverage data is collected by the drug distributors in all MDA campaigns. The national STH prevalence survey was integrated with the water and sanitation sector. Furthermore, although surveys and samples are collected and analyzed by a host of different organizations, all final data is stored in a single database.

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<sup>23</sup> 2002 figures from De Ribes et al. (2005), 2013 survey results not yet published.

Table 12 • Integration of Haiti Project Components

Components	Elements	Level of Integration	Justification	Overall Integration
<b>Management</b>	Political will	Coordinated	All stakeholders agree on integrated strategy; strong support from MSPP, Minister of Health; DINEPA observes the implementation of health activities.	<b>Linked</b>
	Project coordinating unit	Linked	No coordinating committee, MSPP unofficially coordinates partners; DINEPA is official executing agency for three projects, MSPP for one, and UND for one.	
	Planning and operations	Linked	Different organizations carrying out activities in different regions; communication within MSPP and among different organizations can be a challenge. Implementation of STH and LF MDA fully integrated in Port-au-Prince.	
	Human resource management structures	Linked	IMA and UND recruit and manage distributors from respective regions; social mobilization workers supervised by MSPP, no interaction with water and sanitation staff. CHW staff is integrated between health and education sectors.	
	Administration of supplies/ materials	Linked	Many different institutions acquiring and donating materials. UND manages materials in Port-au-Prince, MSPP in other regions. PAHO stores medications at MSPP's PROMESS.	
<b>Financing</b>	Funding source	Linked	Financed by five IDB projects with funding from IDB, Spain, PepsiCo Foundation, UND, others, and in-kind donations from at least seven other organizations.	<b>Linked</b>
	Administration of finances and payments	No Formal Interaction	DINEPA, MSPP, and UND administer project funds and disburse them to implementing organizations. Support from other organizations not pooled.	

<b>Implementation</b>	Division of labor	Coordinated	Same community distributors for LF and STH in Port-au-Prince. Health and water/sanitation staff specialized. CHW staff work with variety of health initiatives.	<b>Coordinated</b>
	Training and capacity building	Linked	Integrated training for LF and STH in Port-au-Prince; some joint training sessions, but mostly separate sessions held by UND, IMA, MSPP.	
	Distribution and use of supplies/materials	Integrated	LF and STH MDA integrated in Port-au-Prince, STH MDA and other health activities integrated in CHW; STH MDA and hygiene education integrated into schools and primary health clinics in intermediate and rural projects.	
<b>Monitoring and Evaluation</b>	M&E systems	Integrated	In Port-au-Prince, same indicators used for both diseases; STH prevalence survey includes water and sanitation questions.	<b>Integrated</b>
	M&E strategy	Coordinated	Endline for both diseases will be conducted in same sentinel sites; MDA coverage data collected by distributors; UND, IMA, LNSP, MSPP all have roles.	
	Data management	Integrated	Data collected by IMA and UND and sent to MSPP to manage all data and disseminate it to stakeholders.	

Source: Authors





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# Chiapas, Mexico

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## Context

Mexico recently became the world's 14th largest economy. However, large segments of the population have not benefited from recent economic growth, and inequality remains one of the country's largest challenges for development. The southern state of Chiapas is one of the poorest states in Mexico and it has the highest burden of NTDs, with as many as 300,000 of its 4 million residents at risk of contracting at least one of these diseases (IDB 2013). The Chiapas demonstration project sought to assess and control NTDs in 10 municipalities: Chanal, Huixtán, Oxchuc, Tenejapa, San Juan Cancuc, Chalchihuitan, Pantehlo, Ocosingo, Altamirano, and Chilón. The population of these municipalities is largely indigenous. More than 90 percent of residents speak Tzotzil or Tzeltal, the region's two main indigenous languages, and less than seven percent speak Spanish (ISECH 2012). Most of the population lives in isolated villages, almost 60 percent live in overcrowded houses, and almost 40 percent do not have latrines in their houses. In addition to their poor living conditions, the suspected presence of insect vectors and the overpopulation of dogs make residents susceptible to at least six NTDs: STH, trachoma, Chagas disease, leishmaniasis, onchocerciasis, and rabies (ISECH 2012).

According to the baseline survey, more than 40 percent of the target area population was infected with STH, which contributes to high levels of malnutrition, anemia, and child stunting (ISECH 2012). The Mexican government has been providing deworming medication through "National Health

Weeks", but efforts have been complicated in Chiapas by operational shortcomings in the organization of these campaigns, as well as poor water and sanitation infrastructure and the high percentage of homes with dirt floors.

Trachoma is the leading cause of infectious and preventable blindness globally. In 2008, 101 cases were found in the central highlands of Chiapas, the only state in Mexico where the disease still exists (IDB 2013). Trachoma is caused by the bacterium *Chlamydia trachomatis*, which is transmitted through close contact with eye discharge from an infected person or their belongings; the discharge can also be carried on the feet of flies. Trachoma causes redness and swelling of the eye, sensitivity to light, and, if left untreated, causes the inside of the eyelid to turn inward (a condition called trichiasis) and the eyelashes to scrape and scar the cornea, leading to painful and irreversible blindness. The SAFE strategy is currently used to treat and prevent infection. The strategy calls for **S**urgery for trichiasis, **A**ntibiotics to treat and prevent active infection, **F**acial cleanliness to prevent disease transmission, and **E**nvironmental and educational efforts to increase access to clean water and proper sanitation. Since 2004, the state of Chiapas has implemented a number of activities to prevent and treat trachoma, including public campaigns to promote and teach proper facial hygiene, ophthalmologic exams, face washing workshops for schoolchildren, and surgical campaigns for those already affected by the disease. Significant recent investments in water and sanitation infrastructure by the state

government were also expected to reduce the burden of trachoma and other NTDs.

Chagas disease is caused by the protozoan parasite *Trypanosoma cruzi*. It is spread through the feces of infected triatomine bugs, which often inhabit houses made from mud, palm thatch, or adobe. The feces of triatomine bugs can enter a person's body after they are bitten, and the parasite can also be spread through blood transfusions, during childbirth, and through uncooked contaminated food. For a few weeks or months after infection, Chagas causes headaches, rashes, diarrhea, and vomiting, and sometimes causes death in children from inflammation of the heart or brain. If left untreated, symptoms can return decades later as heart failure, cardiac arrest, or intestinal complications. The disease is treated on an individual basis and can be cured by killing the parasite with benznidazole and nifurtimox shortly after infection (CDC 2013c).

Leishmaniasis causes sores on the skin (cutaneous leishmaniasis), nose, mouth and throat (mucosal leishmaniasis), or damage to the spleen, liver, and bone marrow (visceral leishmaniasis). Visceral leishmaniasis is often fatal if left untreated, and the sores from the cutaneous and mucosal varieties can leave severe scars, resulting in social exclusion. People are infected when bit by sandflies carrying *Leishmania* parasite (CDC 2013a). Leishmaniasis is treated on a case by case basis with different medications depending on the disease, species of parasite, and geographic location (WHO 2013a). Since malaria has largely been confined to small areas of Mexico, some resources earmarked for that disease were diverted to activities to address Chagas and leishmaniasis. These additional resources, however, had been insufficient to bring these NTDs under control.

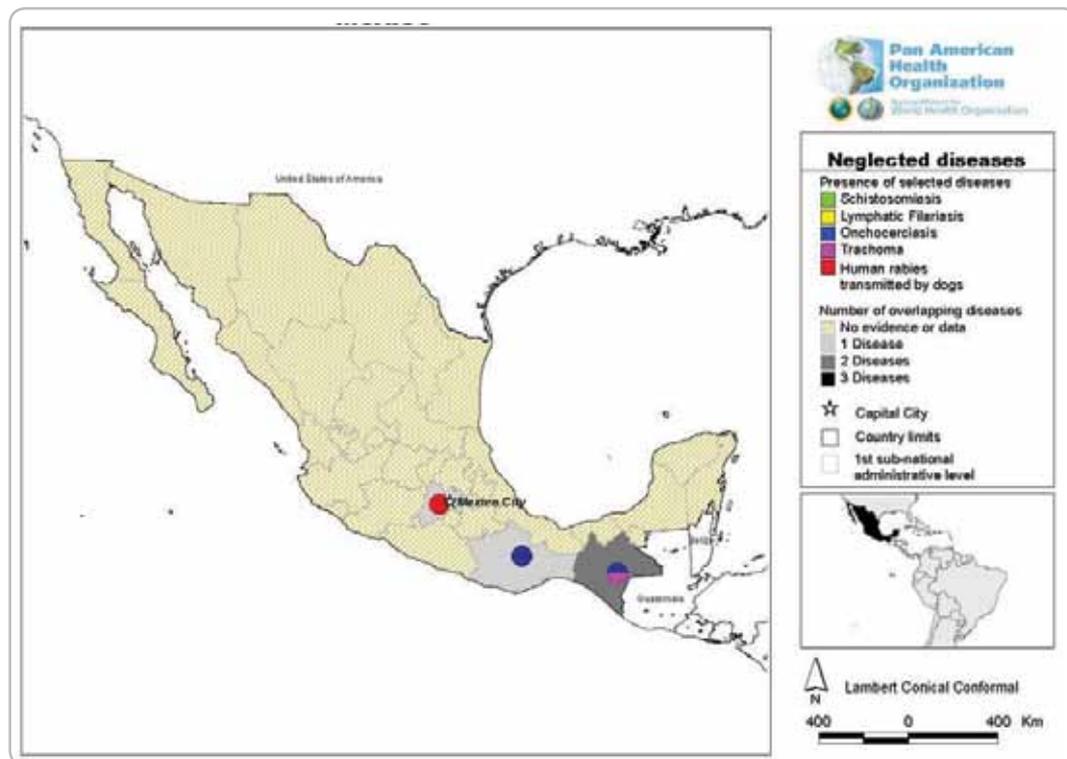
Onchocerciasis, also known as “river blindness,” is an NTD that causes disfiguring and painful skin infections and eye lesions, and is the second leading infectious cause of blindness globally. River blindness is spread when infected *Simulium* blackflies

bite a person and leave the larvae of the parasitic worm *Onchocerca volvulus* on the person's skin. River blindness can be treated and symptoms prevented through MDA of ivermectin to at-risk populations (CDC 2013b). With the help of the Carter Center's Onchocerciasis Elimination Program of the Americas, transmission of the parasite has been stopped in 11 of the 13 focal areas in Latin America, including in Chiapas (Carter Center 2014). Chiapas is currently in the process of a three-year post-treatment surveillance phase, at the conclusion of which Mexico will be able to request from the WHO verification of elimination of this NTD from the country.

Rabies is a virus transmitted through saliva or brain/nervous system tissue, and is usually spread to humans from the bite of an infected dog, bat, or other animal. This NTD causes fever, pain, and tingling at the site of the bite, and quickly spreads through the nervous system and causes fatal swelling of the spinal cord and brain. Widespread vaccination of dogs is the preferred method of prevention, but humans can also be vaccinated before being exposed to the virus. The effects of the disease can also be prevented by administering post-exposure prophylaxis to people soon after they are bit by a suspected rabid animal, a procedure that includes cleaning the wound, administering a course of vaccines, and in some cases administering rabies immunoglobulin (WHO 2013b). While the rabies situation in Chiapas has been under control, the lack of resources to vaccinate cats and dogs and strengthen surveillance has prevented the disease from being completely eliminated.

In order to reinforce the activities against NTDs already being conducted in Chiapas, the LAC NTD Initiative partnered with the Mexican government, and the state government of Chiapas through the *Chiapas State Health Institute* (ISECH), *FEMSA Foundation*, and the *Cinépolis Foundation*, to implement the Chiapas demonstration project. The project first conducted a baseline survey to assess the burden of five NTDs in the state and offered support

Figure 12 • Overlapping NTDs in Mexico



Source: PAHO (2009)

to strengthen the state’s NTD surveillance system.<sup>24</sup> In an effort to prevent new NTD infections, the project provided treatment for STH and trachoma, canine and feline rabies vaccinations, and a social mobilization campaign that used games, movies, and puppet shows as vehicles for teaching preventative practices for trachoma, Chagas, leishmaniasis, and STH. To reduce risk factors, the project also supported federal and state efforts to spray for insect vectors. The project improved the capacity of local actors in order to ensure sustainability of the results by training health personnel and community leaders. Finally, 14 people suffering from trachoma were treated with antibiotics, eight were operated on to prevent the onset of blindness, and another four were put under surveillance (IDB 2012c).

### Purpose of Integration

The Chiapas demonstration project sought to conserve both human and financial resources by conducting an integrated baseline survey that collected information on five NTDs at once using integrated mobile teams. The integrated baseline was also intended to produce significant time savings for beneficiaries who would no longer need to respond to numerous separate surveys. Mobile teams with knowledge of many NTDs would be able to provide a range of diagnostic, treatment, and consultation services to beneficiaries regardless of their affliction. Furthermore, interventions from other sectors, such as vector control and hygiene education campaigns, would reduce the risk factors for acquiring NTDs and thus increase the chances of producing

<sup>24</sup> The five NTDs assessed in the baseline survey are trachoma, STH, Chagas, leishmaniasis, and rabies.

sustainable gains in stopping their transmission.

## Integration of Project Components

### Management

The Chiapas state government was deeply committed to eliminating trachoma from the few villages in Mexico where it was still being transmitted. At the onset of the project, the LAC NTD Initiative leveraged this enthusiasm for eliminating trachoma to generate political will for addressing other NTDs that afflict the population. In 2009, the government of Chiapas and the Mexican federal government expressed their commitment to addressing multiple NTDs by laying out a series of objectives pertaining to NTD elimination and control that they hoped to achieve by 2012 (IDB 2013). Because eliminating trachoma was the government's initial priority, activities to address all diseases were focused in villages where the residents were at risk of contracting trachoma.

As the executing agency, the *Public Health Directorate* (DSP) of ISECH was responsible for the planning and implementation of the Chiapas demonstration project. Within DSP, the Sub-directorate of Preventative Programs and its Department of Prevention and Control of Vector-borne Diseases played a leading role. The heads of the trachoma, onchocerciasis, leishmaniasis-Chagas, and rabies programs participated actively in the planning and management of the project. Project activities were defined during meetings between ISECH stakeholders, the individual disease programs, and representatives from the targeted municipalities. PAHO provided technical advice primarily through the trachoma control and elimination program. The Sub-directorate of Preventative Programs hired a technical coordinator and an administrative coordinator to organize these meetings and facilitate communication between all partners. People interviewed expressed that it was essential to engage with indigenous leaders from the beginning in order to secure access to their communities. Some

indigenous leaders initially resisted some activities, such as taking blood samples, due to their traditional beliefs. These activities were eventually approved, but only after extended negotiations that delayed the implementation of the project.

The DSP was responsible for managing the personnel working on the Chiapas demonstration project. The Sub-directorate of Preventative Programs, through the technical and administrative coordinators, managed the integrated mobile NTD teams that implemented the project in the isolated communities of the state. The trachoma project provided its own outreach personnel to serve on the integrated teams, and DSP hired additional personnel to complete the teams. Entomologists were managed by the Chief of Prevention and Control of Vector-borne Disease but worked directly with the technical coordinator of the demonstration project. The demonstration project hired a newly-formed group of individual researchers to design and manage the baseline NTD surveillance survey. The state's mobile NTD teams, however, collected the data and the state laboratory of public health examined the samples. Interviews revealed that high turnover of employees was a major challenge for the project and the resulting lack of continuity complicated the implementation of some activities. The administrative coordinator was responsible for acquiring the materials needed for the project, but the budget for the project was administered separately from ISECH's general operating budget.

The management of the Chiapas demonstration project is classified as *coordinated* according to Shigayeva et al. (2010)'s framework. The federal and state governments were committed to address NTDs, but prioritized trachoma. Different disease specialists and generalists within DSP planned and coordinated the project. Beneficiary communities were consulted for the planning of the project but there was no official committee that put all stakeholders on an equal level to discuss their ideas and concerns openly. However, technical and administrative coordinators did facilitate

communication between various participants in the project. All project personnel were managed largely by DSP and a single person was responsible for acquiring all materials, although procurement for the project was not integrated with normal ISECH activities.

## Financing

The Chiapas demonstration project was financed by Sabin and the Global Network, through a foundation grant, the Chiapas state government through ISECH, and by *FEMSA Foundation*, and *Cinépolis Foundation*. The government of Chiapas financed staff salaries and transportation costs and contributed to the costs of medicine, promotional materials, pharmaceutical products, supplies for trachoma surgeries, traps for insects, and laboratory material, in addition to supporting other activities. *Cinépolis Foundation* supported the *Ruta Cine Rural*<sup>25</sup>, a campaign that screened movies in rural schools while also teaching children about basic hygienic practices and disease prevention. The foundation provided mobile screens, speakers, projectors, and other supplies needed for the campaign. *FEMSA Foundation* covered the costs of hiring consultants for the baseline survey and other monitoring activities, purchasing GPS units and computers, the cost of training activities, producing social mobilization materials, and providing refreshments for the *Ruta Cine Rural*. As the executing agency, DSP managed funding disbursements from the IDB and *FEMSA Foundation*. ISECH claims that integrating activities to address various NTDs resulted in significant savings of time and money, and it emphasized the importance of integrating data collection and social mobilization activities.

The financing component of the demonstration project is classified as *coordinated*. Four organizations provided funding but DSP was responsible both for administering most of the money and for implementing the project. *Cinépolis* supported social mobilization activities

related to the movie screenings. The funding from DSP and *FEMSA Foundation* was pooled and was allocated based on project needs. Financing cannot be classified as *integrated* because DSP administered the budget for the project separately from ISECH's general operating budget.

## Implementation

The implementation of the demonstration project centered on the multi-disciplinary mobile NTD teams, which were composed of doctors, nurses, health technicians, and entomologists. Many of the team members were from the local communities, and hence spoke the indigenous languages, were trusted in the community, and were familiar with the isolated villages where they were working. Nevertheless, interview respondents reported that the mountainous geography of the region, dispersion of the communities, poor quality roads, and harsh rainy season extended the time needed to implement project activities.

The mobile teams first collected the data for the baseline survey in 35 villages in 10 municipalities. They went from house to house interviewing residents about their knowledge of the diseases, conducting clinical examinations, collecting blood and stool samples, and trapping insect vectors on the outskirts of the communities. The health technicians examined potential cases and entomologists used light traps to capture insects and send them to the state laboratory to determine if they were vectors of Chagas and leishmaniasis. After residents completed the surveys, the mobile teams described each of the diseases, showed pictures of their symptoms and vectors, and explained the importance of washing one's hands and face in order to prevent trachoma.

Although the baseline survey identified no new cases of trachoma, the teams gave antibiotics to 14 residents infected with trachoma who had previously refused

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<sup>25</sup> Rural Cinema Route.

treatment, and referred eight others for surgery (IDB 2012c). The lack of new cases signifies that ISECH's years of hygiene education and treatment programs have been successful. Teams also distributed albendazole to children aged two years and older and their parents in order to treat STH. Given the high prevalence of STH found in the baseline, ISECH has decided it will continue distributing deworming medication to children and their parents as part of "National Health Week" campaigns and through clinics. These activities will be financed and supported by the Mesoamerica Health Initiative 2015, a regional health initiative of the IDB, the Bill & Melinda Gates Foundation, the Government of Spain, and the Carlos Slim Foundation.

The baseline survey did not find evidence of rabies within the target communities, but it did find that many dogs and cats had not been vaccinated and that residents had little understanding of the modes of transmission or methods of prevention of the disease (ISECH 2012). To prevent future infections, personnel employed by the malaria program carried out a rabies vaccination campaign for dogs and cats in seven of the villages. The other 28 targeted villages had been covered by campaigns in previous years (IDB 2012c).

In addition to the baseline survey, the project supported ISECH in monitoring the presence of onchocerciasis in the state. Surveillance activities confirmed that the disease had been eliminated. The demonstration project also financed the purchase of materials that were used to fumigate vulnerable areas against insect vectors.

With poor understanding of risk factors and lack of knowledge regarding hygienic practices putting residents of Chiapas in danger of contracting NTDs, the demonstration project conducted a social mobilization campaign in the target villages. In addition to discussing the prevention and symptoms of NTDs during home visits, members of the mobile teams also gave public educational talks on Chagas and leishmaniasis in the communities. In schools,

health personnel led workshops on hand and face washing, gave puppet shows and painted murals, and handed out brochures that promoted hygienic behavior and taught students about NTDs. As of 2012, more than 20,000 students had participated in these activities (IDB 2012c). Five schools also participated in *Ruta Cine Rural*, an innovative pilot program that showed children's films on portable screens before the NTD workshops in order to increase students' interest in the campaigns and engagement with the material. The program reached a total of 2,900 students, and was also implemented in a public plaza, where it reached an additional 1,000 people. Additionally, social mobilization efforts included radio shows that were broadcast in Tzotzil and Tzeltal, targeting more than 100,000 people with information about NTDs (IDB 2013).

The project held two training workshops for the mobile NTD teams. Each was attended by 35 team members. The first five-day workshop took place in October 2011 (IDB 2012c). The coordinators from each of the disease programs taught all participants how to detect, attend to, prevent, treat, and teach others about trachoma, Chagas, leishmaniasis, rabies, onchocercosis, and STH. Personnel from the state laboratory also taught the mobile team members how to take samples and prepare them to be sent to the laboratory. The second workshop was run by the group of researchers that conducted the baseline survey. They trained the team members in methods for conducting surveys and capturing insect vectors. Additionally, community leaders received training on how to treat NTDs so that they could assist infected residents of their community with treatment even when the mobile teams were not in the village.

The implementation of the Chiapas demonstration project is classified as *integrated* according to Shigayeva et al. (2010)'s framework. Almost all project activities for all diseases were executed by the multi-disciplinary mobile NTD teams, including MDA, clinical evaluations and treatment, and social mobilization

campaigns. Baseline data collection for M&E was conducted by the teams at the same time that they administered treatment. Social mobilization and hygiene activities were integrated into the education system through workshops held at schools, and addressed all diseases simultaneously. Finally, all mobile team members and community leaders were trained in six NTDs.

## Monitoring and Evaluation

The M&E of the Chiapas demonstration project was managed by the Sub-directorate of Preventative Programs of DSP with support from the Department of Prevention and Control of Vector-borne Diseases and the coordinators of the individual disease programs. The integrated baseline survey discussed above was fundamental to assessing the epidemiological situation of the region and determining which interventions would be most effective in reducing the NTD burden. The KAP component of the baseline also revealed a great need to educate the community about NTDs and encourage more hygienic behavior (ISECH 2012). Most importantly, the integrated process of collecting data for the baseline saved time for families that would have had to repeat the same basic information several times for different health teams focused on specific diseases. The baseline survey did not identify any new cases of trachoma, Chagas disease, or human rabies, nor were any leishmaniasis vectors found (ISECH 2012). Nevertheless, important risk factors for these diseases were detected, warranting that preventive measures be taken. STH prevalence among the population was over 40 percent (ISECH 2012). The results were documented in a report sent to ISECH and the IDB, although people interviewed for this book claimed that not all coordinators of the disease programs were able to see the report before new state and federal elections resulted in significant turnover of project personnel (ISECH 2012).

In addition to establishing a baseline, the demonstration project also financed several activities meant to strengthen ISECH's disease surveillance system. The mobile

NTD teams were equipped with GPS units while they collected data for the baseline, allowing the *Epidemiological Investigation Center* (CIE) to georeference the houses visited by the teams and the location of cases of different NTDs. CIE then visualized this data on maps to help epidemiologists to continually monitor the NTD situation in the targeted communities as new cases were found. The project also financed the design of a new data management platform that has enabled health centers to share disease data more efficiently. Finally, during house visits, mobile NTD teams trained community members how to identify symptoms of NTDs and report any suspected cases to the health authorities.

To monitor the implementation of the project, representatives from the individual disease programs occasionally accompanied the NTD teams on community visits. DSP held meetings to evaluate the strengths and weaknesses of implementation of the field work in order to improve the performance of the project. Weekly reports indicating changes in the project timetable were also disseminated to relevant stakeholders.

The M&E of the project is classified as *integrated*. Mobile teams collected demographic information, KAP data, blood and stool samples, and vector samples in the integrated baseline survey. Mapping activities were integrated with baseline data collection and the implementation of treatment and education activities and management of data was integrated in the primary health system.

Table 13 • Integration of Chiapas Project Components

Components	Elements	Level of Integration	Justification	Overall Integration
<b>Management</b>	Political will	Coordinated	Federal and state governments committed to concrete objectives for NTD control, but there is stronger political will to address trachoma than other diseases because trachoma is targeted for elimination.	<b>Coordinated</b>
	Project coordinating unit	Coordinated	Different departments of DSP work together to implement project. Technical and administrative coordinators collaborate with other departments and the disease programs, but there is no stakeholders committee.	
	Planning and operations	Coordinated	Different disease programs, Vector-borne Disease Department, indigenous community leaders, DSP administration all included in planning and management.	
	Human resource management structures	Integrated	Sub-directorate of Preventative Programs manages teams, entomologists managed by Vector-borne Disease Department, but all part of DSP.	
	Administration of supplies/materials	Coordinated	Administrative coordinator responsible for procurement. Project has own budget and procurement rules separate from rest of ISECH.	
<b>Financing</b>	Funding source	Coordinated	ISECH, LAC NTD Initiative, <i>FEMSA Foundation</i> , <i>Cinépolis Foundation</i> .	<b>Coordinated</b>
	Administration of finances and payments	Coordinated	DSP manages ISECH's contribution and that of LAC NTD Initiative and <i>FEMSA Foundation</i> . Single entity managed funds and implemented project, but budget separate from general budget. <i>Cinépolis Foundation</i> gave support only for <i>Ruta Cine Rural</i> and managed its own contribution.	
<b>Implementation</b>	Division of labor	Integrated	Interdisciplinary mobile teams conduct examinations, collect vectors; implement social mobilization for multiple diseases; conduct deworming and treatment. Malaria staff worked with rabies vaccination.	<b>Integrated</b>
	Training and capacity building	Integrated	Mobile team members trained in six NTDs; training included taking samples, collecting insects, and conducting surveys. Community representatives trained in all diseases.	
	Distribution and use of supplies/materials	Integrated	Mobile teams collect data, treat multiple diseases, conduct education sessions, and study vectors all in one visit. Education, health, and environment interventions are integrated with each other and with M&E. Social mobilization integrated for multiple diseases and with education sector in schools.	

<b>Monitoring and Evaluation</b>	M&E systems	Integrated	Integrated survey to collect demographic info, KAP information, collect samples and conduct exams for all diseases. Georeferencing integrated with baseline collection.	<b>Integrated</b>
	M&E strategy	Integrated	Monitoring done by individual disease program coordinators. Baseline information collected on all diseases, and sectors – including environment (vectors), health (samples), and education/behavior (KAP) – and integrated with other activities (drug distribution, education).	
	Data management	Integrated	New platform integrated with primary health care system through clinics. Single integrated baseline report.	

Source: Authors



# Conclusions

Jonathan Cali, Ignez Tristao

This chapter compares the level and nature of integration of the different projects and discusses some of the consequences of their design and implementation. It also highlights some of the most important general lessons learned through the LAC NTD Initiative's experiences attempting to establish an NTD trust fund and planning, implementing, and evaluating the four demonstration projects featured in this book. In addition, it brings attention to some challenges that advocates, managers and policy makers should be prepared to address when attempting to design, implement, or garner support for integrated NTD programs.

## Comparing and Contrasting the Four Cases

This study, by design, is unable to draw inferences on the causal relationship between integration and achieving objectives of controlling or eliminating NTDs. However, comparing and contrasting the cases can provide some answers to questions posed in the NTD academic literature, and demonstrates how the integration of the projects was affected by the diseases they addressed, the interventions they implemented, the health systems, and the general context in which they operated. Although information on the impact of the various demonstration projects on disease prevalence is not available, this chapter does discuss the added value of the LAC NTD Initiative in terms of STH and LF treatment coverage, as compared to previously existing NTD interventions.

## Management

The management component of the Recife project is classified as *integrated*, the Guyana and Chiapas projects as *coordinated*, and the Haiti project as *linked*. The LAC NTD Initiative and its partners in national and local governments played an important role in building political will for all of the demonstration projects. Although the projects addressed a number of NTDs, they focused geographically on three of the last four countries in the LAC region that are still endemic for LF, in addition to the only geographical region in LAC outside of Brazil where trachoma was still being transmitted.

The Recife and Chiapas projects appeared to have a stronger coalition of political support than the other two projects. Water and sanitation institutions served as the executing agencies for the Haiti and Guyana projects. These institutions had little previous experience working with the health sector, and thus were not enthusiastic about the ministries of health of their respective countries managing NTD activities that were added to their infrastructure projects. In Guyana, the lack of initial political support may have complicated the coordination between the GWI and the MOH. In Haiti, there was no evidence of negative repercussions with the intersectoral coordination. Water and sanitation improvements were also conducted in Chiapas, but those activities were implemented separately from the NTD projects by the local government.

The Recife project was the only project that set up a management committee to coordinate between stakeholders from the inception of the project. This committee promoted strong relationships between partner institutions and enabled the Recife project to avoid some of the communication challenges experienced in Haiti and the early stages of the Guyana project. The Chiapas project did not employ a management committee, but most activities were implemented by a single institution. In this context, the presence of coordinators tasked with reaching out to indigenous community leaders and donors appeared to be sufficient for maintaining strong communication throughout the course of the project.

Based on these case studies, it appears that management of staff does not have to be centralized to be integrated across disciplines or disease specialties. In Chiapas, most activities were implemented by DSP, which therefore managed most personnel. In Recife, however, the three municipal governments and the many schools involved in the project each managed their own interdisciplinary, fully integrated staff. In Guyana, implementation of the MDA campaigns was decentralized to community health centers that recruit and supervise their own distributors. This model has improved the distribution of drugs because local drug distributors are more familiar with the communities and can design their own distribution campaigns based on the local context. Finally, staff members in Haiti are being managed by separate NGOs and the MSPP, depending on the region of the country in which they are operating. By forming partnerships with NGOs, the Haitian government is taking advantage of available financial and human resources to ensure NTD interventions are reaching people throughout the country.

Many people interviewed for this book highlighted challenges and delays with procuring supplies due to the bureaucratic procedures imposed by government ministries or donors. To avoid this problem, the project in Recife used an NGO as its executing agency and the project in

Chiapas operated on a separate budget from the rest of the government ministry that was implementing the project. Integrated procurement systems appear to reduce the need to train multiple people or organizations in navigating complex acquisition processes. The failure to comply with these procedures can delay implementation of the project, as occurred in Guyana. In Haiti, the dense presence of aid organizations operating in the country allowed the government to take advantage of numerous donations of money and materials for implementing the NTD project. While these donations assisted the Haiti project in overcoming a severe lack of resources, the MSPP often struggled to manage its relationship with so many diverse partner organizations.

## Financing

All of the demonstration projects have received funding from various sources. The financing component of the Recife and Chiapas projects are classified as *coordinated*, while the Haiti and Guyana projects are classified as *linked*. The Haiti project has significantly more sources of funding than the others due to the greater availability of organizations providing funding for development projects.

In each of the Recife, Guyana, and Chiapas projects, one organization is designated to administer funds received from the LAC NTD Initiative through the IDB or from IDB itself, but contributions from other sources have often been administered separately and designated for specific activities. The funding for the Haiti project is administered by three different organizations largely because the project is being implemented throughout the country, as opposed to the other projects that focus on a specific city or cluster of villages. The financing of the Recife and Chiapas projects is classified as slightly more integrated than the others because in Recife the management committee coordinated the contributions of each partner and in Chiapas, *FEMSA Foundation's* donation was pooled with the funds under the control of ISECH. It appears that having many funding

sources does not produce negative effects on the management of NTD projects, especially when some of those sources are local institutions. It does seem to be important, however, that the various sources of funding are well-coordinated.

Interview respondents from Chiapas and Recife reported that integrating NTD control and elimination activities produced significant savings of both money and time. In Guyana, however, poor coordination between the MOH and GWI caused delays. Furthermore, a substantial amount of time had to be invested in facilitating the relationship between the Guyana MOH and GWI. Interviewees did express, however, that attaching the NTD component to existing water and sanitation projects attracted additional political attention to NTD control and elimination that it may not have received on its own.

## Implementation

The implementations of the Recife and Chiapas projects are classified as *integrated* and for the Guyana and Haiti projects are classified as *coordinated*. Each project made use of multi-disciplinary staff that implements activities for more than one disease, and most incorporate disease specialists into the project for additional technical support. Including specialist staff from different programs may bring the additional benefit of preventing discord among personnel as disease-specific programs are merged.

All projects also benefited from a strong collaboration with the education sector or primary health care system. By using teachers to educate students about NTD prevention, teachers or primary health workers to distribute drugs, or primary health care personnel to treat infected individuals, the projects were able to take advantage of the existing infrastructure and reduce the number of new employees they had to hire. In Guyana, nurses at health clinics and personnel from the MOH and GWI reported that taking on additional responsibilities

for the NTD project was challenging. In Haiti, interviewees claimed that adding vaccination services to deworming campaigns increased demand and cost. Nevertheless, primary health providers did not appear to be overwhelmed by the addition of NTD activities. The projects had some difficulty integrating human resource roles between the water and sanitation and the health sectors, but the Guyana project eventually succeeded in establishing shared procurement, communications, and project coordination roles.

The Recife, Guyana, and Haiti projects all used integrated MDA to address multiple NTDs at once. The implementation of the Recife and Chiapas projects are classified as being more integrated than the others because they address more diseases than in Guyana and Haiti and integrate treatment with education and vector control. It is important to note that not all efforts to prevent and treat NTDs can be integrated with each other due to the nature of the targeted diseases. For example, leprosy patients must receive regular treatment for at least six months, and thus cannot be cured with MDA. The Chiapas project additionally integrated M&E activities into treatment, education, and vector control, enabling the project to save the time and money that would be required to send multiple teams of specialists to geographically-dispersed villages.

Both the Recife and Chiapas projects also trained their staff in joint sessions focusing on all relevant NTDs. Integrated training sessions allowed these projects to save money on materials and instructors, save time, and produce qualified personnel with a strong understanding of multiple NTDs. There was no evidence to suggest that training project staff or teachers in multiple NTDs at once made the material more difficult to understand. The decentralized nature of MDA in the Guyana and Haiti projects means that staff members are trained in separate sessions according to their geographical location and the clinic or NGO that manages them.

Social mobilization campaigns played a vital role in all four projects. These campaigns serve to inform the population of when and why NTD activities will be carried out, and teach them about the diseases and methods for preventing them. The Recife, Haiti, and Chiapas projects implemented NTD prevention and hygiene promotion activities in schools, and the Guyana project was beginning to implement activities in schools at the time of the interviews. All projects saw schools as an easy way to reach children, who are often the most vulnerable to being infected with NTDs. Although interviewees from Recife reported some conflicts between the NTD social mobilization campaign and general curriculum, it appears that NTD education can be implemented in schools without major disruptions to the school day. Creative media, such as the *Carvana Prudente* cartoon series in Recife and *Ruta Cine Rural* in Chiapas, were fundamental for engaging students with the material in a fun and interactive manner. To reach the general population, the Recife project invited parents to participate in school-based education activities and sent materials home with children. The Guyana, Haiti, and Chiapas projects, however, used radio ads, posters, community meetings, telephone hotlines, traditional bell-criers, and home visits to inform and educate the population. The social mobilization campaigns in Recife and Chiapas informed the population about more than two NTDs at once. Interviewees in Recife reported that some children had difficulty differentiating the diseases after the information sessions, but no problems were reported in Chiapas.

### Monitoring and Evaluation

The M&E component of the Haiti and Chiapas projects are classified as *integrated*, for the Guyana project it is classified as *coordinated*, and the M&E of Recife classified as *linked*. The Haiti project employs integrated surveys that collect data on the availability of water and sanitation and NTD prevalence. The Chiapas project used a single integrated survey to collect KAP data on five diseases and combines M&E with treatment, educational, and disease mapping activities.

In Guyana, primary health care clinics were heavily involved in managing data. Health and water and sanitation M&E were not integrated in Guyana, but were in Haiti. In each of the projects in Recife, Guyana and Haiti, coverage data collection and drug distribution were conducted at the same time.

The M&E of the Recife project was classified as the least integrated of the four projects. For the baseline, KAP, STH, and LF data was collected separately by different specialists. Evaluations were conducted only for STH and leprosy, and each of those diseases require distinct methods of data collection and analysis.

With regard to data management, the Guyana, Haiti, and Chiapas projects have each used a single database to store all data collected during the monitoring of the project. In Recife, project data was stored separately by disease in Brazil's national epidemiological databases.

The LAC NTD Initiative has shown that there are ample opportunities for integrating M&E activities across diseases, across sectors, and within the primary health system. As demonstrated in this book, KAP data on multiple diseases can be collected at the same time as stool and blood samples. Integrated surveys can simultaneously assess knowledge of NTDs and disease prevention methods, coverage of water and sanitation services, and hygienic practices. MDA coverage data can and should be collected during pill distribution, and primary health care systems can be used to monitor the population for NTDs or to manage data collected by NTD projects. Integrating M&E activities can produce financial savings by reducing personnel, travel costs, and duplication of data management platforms, and can produce time savings both for beneficiaries and implementers by limiting the number of surveys that need to be conducted. Nevertheless, the M&E of some diseases are more difficult to integrate than others, and integrated M&E strategies require well trained staff members and strong cooperation among partners.

Table 14 • Summary of Integration of Four Demonstration Projects

Components	Elements	Demonstration Projects			
		Recife	Guyana (current levels)	Haiti	Chiapas
Management	Overall Integration	Integrated	Coordinated	Linked	Coordinated
	Political will	Integrated	Linked	Coordinated	Coordinated
	Project coordinating unit	Integrated	Coordinated	Linked	Coordinated
	Planning and operations	Integrated	Linked	Linked	Coordinated
	Human resource management structures	Integrated	Linked	Linked	Integrated
	Administration of supplies/materials	Integrated	Integrated	Linked	Coordinated
Financing	Overall Integration	Coordinated	Linked	Linked	Coordinated
	Funding source	Coordinated	Linked	Linked	Coordinated
	Administration of finances and payments	Coordinated	Linked	No Formal Interaction	Coordinated
Implementation	Overall Integration	Integrated	Coordinated	Coordinated	Integrated
	Division of labor	Integrated	Coordinated	Coordinated	Integrated
	Training and capacity building	Integrated	Coordinated	Linked	Integrated
	Distribution and use of supplies/materials	Coordinated	Integrated	Integrated	Integrated
Monitoring and Evaluation	Overall Integration	Linked	Coordinated	Integrated	Integrated
	M&E systems	Linked	Coordinated	Integrated	Integrated
	M&E strategy	Coordinated	Coordinated	Coordinated	Integrated
	Data management	Linked	Integrated	Integrated	Integrated

### Treatment for STH and LF: Before and After the LAC NTD Initiative

It is important to emphasize the value added by the LAC NTD Initiative in terms of expanding preventative treatment for STH and LF through the demonstration projects. Before the initiative began supporting the Recife demonstration project, no MDA campaigns for STH had been conducted in

RMA. STH was instead treated through the primary health care system. Brazilian health statistics show that, in 2010, the year before the demonstration project was implemented, only 32 people were treated for STH in the three target municipalities.<sup>26</sup> Nationwide, only 0.96 percent of the school-age children requiring STH MDA coverage received it in 2009.<sup>27</sup> The MDA campaign created through the LAC NTD Initiative was the first for STH

<sup>26</sup> DataSUS. <http://tabnet.datasus.gov.br/cgi/tabcgi.exe?sih/cnv/nrPE.def>.

<sup>27</sup> WHO PCT databank, soil-transmitted helminthiases. [http://www.who.int/neglected\\_diseases/preventive\\_chemotherapy/sth/en/](http://www.who.int/neglected_diseases/preventive_chemotherapy/sth/en/) Data not available for 2010.

in Brazil, reaching 88.3, 78.3, and 98.0 percent of the target students in Jaboatão dos Guararapes, Olinda, and Recife, respectively.

In Guyana, MDA campaigns for STH and LF had not been conducted in Georgetown or other parts of Region 4 before the demonstration project was implemented. MDA was conducted in other regions of the

country, and in 2010, STH campaigns covered around 31.45 percent of school-age children, and LF campaigns reached 6.2 percent of coverage for the total population (with no coverage in Region 4).<sup>28</sup> The Guyana demonstration project covered 52.8 percent of the target population in the first round, and 72.2 percent in the second round of its joint LF and STH MDA campaign.<sup>29</sup>

**Table 15** • MDA Coverage in LAC NTD Initiative Target Areas, Before and After Interventions from the Demonstration Projects

Demonstration Project	Previous MDA Coverage (%)	LAC Initiative MDA Coverage (%)
Recife	No MDA	<b>STH</b> 88.3 (Jaboatão) 78.3 (Olinda) 98.0 (Recife)
Guyana	No MDA	<b>STH and LF</b> 52.8 (1st round, 2012-2013) 72.2 (2nd round, 2013-2014)
Haiti	71.0	<b>STH and LF</b> 84.0 (1st round, 2012) 63.0 (2nd round, 2013)
Chiapas	Not Available	Not Available

**Table 16** • List of Innovative Interventions Employed in Demonstration Projects

Innovation	Purpose	Project
Self-Image Cards	Diagnosing leprosy	Recife
<i>Ruta Cine Rural</i>	Engaging students in NTD education	Chiapas
<i>Caravana Prudente</i> cartoon series	Engaging students in NTD education	Recife
Child Health Weeks/National Health Weeks	Combining STH treatment with comprehensive children's health services	Haiti; Chiapas
Adding MDA component to water and sanitation project	Leveraging attention and funding	Guyana; Haiti

<sup>28</sup> WHO PCT databank, soil-transmitted helminthiases; [http://www.who.int/neglected\\_diseases/preventive\\_chemotherapy/sth/en/](http://www.who.int/neglected_diseases/preventive_chemotherapy/sth/en/); Lymphatic Filariasis. [http://www.who.int/neglected\\_diseases/preventive\\_chemotherapy/lf/en/](http://www.who.int/neglected_diseases/preventive_chemotherapy/lf/en/)

<sup>29</sup> Preliminary results reported by Guyana Demonstration Project.

In 2011, the year before the LAC NTD Initiative began supporting STH and LF interventions in Haiti, an LF program in Port-au-Prince covered 71 percent of the targeted population.<sup>30</sup> The Haiti demonstration project achieved 84 percent and 63 percent coverage in the first (2012) and second (2013) round of MDA, respectively.<sup>31</sup> The reason for the drop in coverage in the second round is still being investigated, with resistance due to side effects of the previous treatment being one of the main reasons being mentioned for refusing treatment in the second round. The coverage data for MDA campaigns in Chiapas is not available.

## The LAC NTD Initiative: Lessons Learned and Continuing Challenges

### Lessons Learned

#### 1. Involvement and “buy-in” from all major stakeholders from inception of the project are keys to smooth implementation.

Integrated NTD projects will invariably face challenges during planning and implementation that will have to be overcome through cooperative problem-solving by the partners involved. These challenges will have the greatest chance of being overcome if each of the partners has a sense of ownership of the project. At the regional level, the energy dedicated to establishing a *common agenda*, ensuring that activities were *mutually reinforcing*, developing guidelines for *shared measurement*, and maintaining *communication* was crucial to sustaining a strong partnership among the LAC NTD Initiative’s stakeholders.

The demonstration projects with the smoothest execution had made a concerted effort to engage all stakeholders starting with the early planning stages of the project. The Recife project achieved this

by including representatives from the individual disease programs of each of the participating municipalities in its initial planning committee and inviting municipal education specialists to participate in the planning of the social mobilization and education campaign and development of materials. The Chiapas project reached out to indigenous community leaders before the start of the project in order to win their trust and guarantee access to the villages. The project continued to engage and empower the communities to conduct their own disease surveillance by training families during home visits to identify the diseases.

The Guyana project, however, did not engage all relevant stakeholders from the beginning. Several important institutions were not included in the planning and execution of the first MDA round, resulting in the duplication of activities, setbacks in the project timeline, and a failure to achieve the desired level of MDA coverage. After the project engaged these stakeholders in the second round, the implementation of MDA and other activities improved substantially. In Haiti, the lack of coordination within MSPP and between the government and other NGOs conducting NTD activities in the country has similarly resulted in the duplication of activities.

#### 2. There are various models for fostering strong communication between partners, but multi-stakeholder committees, designated coordinators, and leading institutions appear to be the most effective for ensuring successful collaboration between multiple public sector partners.

Partnerships are essential for bringing together the diverse technical fields required to implement an integrated NTD program. For these programs to succeed, they should establish structures that will promote strong communication and coordination

<sup>30</sup> Mass Drug Administration for the Elimination of Lymphatic Filariasis — Port-au-Prince, Haiti, 2011–2012, <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6223a3.htm>.

<sup>31</sup> Preliminary data obtained by IDB staff.

between partners. Partners need a forum to plan activities and to discuss strategies for overcoming challenges as they arise. They also need a written agreement that establishes the responsibilities of each organization, and a designated person or group to take the lead in pulling different stakeholders together. While these may be requirements for any partnership to succeed, they are especially important for integrated NTD programs given the lack of experience that sectors such as water and sanitation and education have working with NTDs, and that private corporations have working with governments and NGOs. Different models were employed at the regional level and by the projects to achieve these objectives, with varying levels of success. Regular meetings and numerous working groups created by the partners of the LAC NTD Initiative, such as the Mapping, Surveillance and Monitoring and Evaluation Working Group, improved communication at the regional level.

For the demonstration projects, it appears that a management committee composed of all stakeholders, as used in Recife, is the most effective coordination mechanism when multiple public entities are implementing a project together and there is no single organization with the authority to lead. Regular committee meetings serve as a useful forum for communication and for holding parties accountable to their obligations. Although the addition of a project coordinator improved communication in Guyana, that project has begun forming a committee in order to improve coordination between the two main public stakeholders, GWI and the MOH. In Chiapas, ISECH was the clear leading institution and used a coordinator and regular meetings to successfully collaborate with partners and local community leaders.

### **3. A well-executed and effective social mobilization campaign is fundamental for the success of MDA.**

MDA campaigns cannot reach their target coverage rates if the population does not know when or why they are being conducted. Residents need to be home at

the time that drugs are being distributed and they need to trust that they will benefit from taking the pills. In Guyana, the failure of the first round social mobilization campaign to reach the target population resulted in many residents refusing to take the deworming drugs because they were not feeling sick, did not trust the distributors, or thought the pills were part of a government conspiracy to harm them. It also takes more time to distribute deworming drugs to a poorly informed population because residents ask more questions before accepting the drugs. Additionally, social mobilization campaigns can be used to teach beneficiaries how to diagnose and prevent NTDs by recognizing symptoms, as well as how to adopt hygienic practices that can prevent them from being re-infected, both of which increase the efficacy of MDA campaigns.

All of the projects used social mobilization campaigns to inform the population about the diseases and upcoming interventions, and some taught hygienic practices. Some of the projects took advantage of strategic partnerships with organizations such as *Cinépolis Foundation* and *FEMSA Foundation* to finance and make in-kind donations to the campaigns. The projects successfully implemented social mobilization campaigns through public service announcements on TV, radio, and billboards, and through visits to private homes, community centers, and civic groups. They also used videos, art, song, dance, puppets shows, and other creative mediums in schools as a way to resonate with students and the community.

### **4. The demonstration projects revealed which aspects of NTD projects can and should be integrated, and which should be implemented separately:**

- **MDA activities for STH and LF can be integrated easily.** STH and LF deworming activities were successfully conducted in Guyana and Haiti.
- **Interventions for some diseases cannot be integrated due to lack of geographical overlap or the nature of the disease.** In Recife, prevalence of schistosomiasis was not high enough in

most schools to integrate treatment with MDA for STH, while leprosy cannot be treated with MDA. In Chiapas, STH was the only one of five diseases that was present in villages at-risk for trachoma.

- **The greatest opportunities for integrating water and sanitation and NTD activities are through joint education campaigns and surveys, and targeting water and sanitation projects to areas with high NTD burden.**

The Guyana project began combining LF prevention and information sessions with hygiene education in schools. The Haiti prevalence survey asked questions about students' access to drinking water and proper waste disposal. The large infrastructure investments included in both programs should improve the chances of MDA campaigns to successfully interrupt transmission of some NTDs (Anderson, Truscott, and Hollingsworth 2014).

- **M&E activities can be integrated among diseases through joint surveys and collection of samples, and integrated with implementation by distributing medication and disease information while collecting data.**

The Chiapas project used a five-disease integrated baseline and NTD teams conducted education and treatment activities while collecting data for the baseline. The other three projects collected MDA coverage data for multiple diseases while distributing drugs.

## **5. NTD advocates can take advantage of water and sanitation projects and other high-profile development initiatives to garner higher levels of support and funding for NTD-specific activities.**

The demonstration projects in Guyana and Haiti added MDA and social mobilization components onto water and sanitation projects. According to interviewees, this arrangement was not ideal because the water and sanitation authorities had no knowledge of the interventions that they were responsible for overseeing. The implementing agencies in Haiti were subjected to the complex bureaucratic

procedures of DINEPA while in Guyana poor communication between GWI and the MOH delayed the project.

In both cases, however, the attention and funding dedicated to large water and sanitation infrastructure investments was used to raise the profile of deworming and other NTD activities. Water and sanitation improvements are generally in high demand because better services provide convenience and privacy to beneficiaries and are symbols of status (Savage, Velleman, and Wicken 2012). NTD advocates can feed off the demand for water and sanitation improvements, and, using evidence, can demonstrate to beneficiaries and policy makers that a small additional investment in MDA can produce exceptionally large health benefits. Although there were no examples in these demonstration projects, strong efforts by NTD advocates may be able to influence water and sanitation authorities to prioritize NTD-endemic areas for investment, or water and sanitation advocates could incorporate the proven benefits of NTD control into their arguments for justifying more spending on water and sanitation projects. However, it is important to remember that poor sanitation and lack of potable water are not risk factors for all NTDs, such as Chagas disease and leishmaniasis, for instance.

## **Continuing Challenges**

### **1. Low internal capacity and complex bureaucratic procedures complicate the planning and implementation of integrated NTD projects.**

Any major public project is challenging to implement in a low-resource setting. National and local governments need to have ownership of a project if it is to be sustainable, but government agencies are often understaffed, have high employee turnover, and sometimes lack specialist knowledge of NTDs. Managers are often overwhelmed with other programs and operate in an environment where bureaucratic procedures and regulations can stall projects. Changes in government complicate these issues, as new governments

may appoint new project leaders or require international partners to sign new agreements. Furthermore, international donors and partners have their own policies and procedures that government personnel must navigate in order to prevent delays.

Integrated NTD projects require highly committed, multi-disciplinary teams to manage the various components of the projects, and often require strong coordination between multiple government agencies working in different technical sectors. These special needs make integrated NTD programs more vulnerable to weak capacity, constantly changing personnel, and fragile relationships between ministries. Poor communication within government ministries, changes in staff, or lack of the necessary knowledge or skills caused delays in each of the four projects. In Haiti, poor communication between two directorates within MSPP delayed the organization of the MDA and social mobilization campaigns. To overcome this challenge, NTD projects should invest heavily in strengthening the capacity of local managers and implementers, should consider innovative management arrangements to reduce red tape and bureaucracy, and should carefully design mechanisms to facilitate communication among partners.

## **2. It is difficult to foster good communication between the water and sanitation sector and the health sector.**

These two sectors have traditionally worked in isolation of each other. Thus water and sanitation specialists often have limited knowledge of NTDs and do not share the same objectives, performance indicators, or technical language as those working in public health. Few water and sanitation organizations have experience working with health specialists and there are few examples of collaboration between health and water and sanitation divisions within large institutions. Furthermore, many public institutions do not have external relations divisions that are tasked with forming partnerships with other institutions. These factors continue to limit

effective communication between the two sectors and thus make collaboration on integrated NTD projects difficult. Well-designed management structures, such as joint committees and regular meetings, can encourage communication between these two vital sectors. Furthermore, in contexts where cooperation between the two sectors is exceedingly difficult, high-level decision makers can coordinate the co-implementation of water and sanitation investments and health interventions in areas with high NTD prevalence without attempting to fully integrate the projects.

## **3. Despite successful programs and obvious benefits, it is still difficult to make integrated NTD programs a top priority.**

The number and type of diseases that are considered to be NTDs varies widely among organizations, making it difficult for advocates to speak with a single, coherent voice. NTDs affect only the poorest and most marginalized populations that have limited access to public services and little political power, making it more challenging to engage governments and corporations that have little interest in or connection with these populations. This reality makes it even more necessary, from an equity standpoint, to advocate that additional resources be directed to address these diseases. Even within affected populations, many people have traditional understandings of sickness and do not realize that the suffering of their families and neighbors is caused by parasites and other NTDs. Furthermore, the global NTD movement is more focused on supporting African and Asian nations, which are considered less capable of addressing NTDs compared to the middle-income countries of LAC, and many donors will only provide funding for specific regions or diseases. Finally, when attempting to attract funding from non-traditional sources, advocates must balance most donors' preference to work with NGOs against the sustainability benefits provided by partnering with governments of endemic countries or regions.

Even when local leaders or international actors do decide to address NTDs, some are resistant to implementing integrated programs. Many key decision makers in the water and sanitation, education, and public health sectors still do not fully understand the link between NTDs and other sectors, and many citizens of countries endemic for NTDs understand even less about these relationships. The lack of empirical evidence demonstrating that investments in the sanitation system and water provision reduce the prevalence of NTDs is a major impediment to their prioritization. Without the support of evidence, decisions about where to implement sanitation improvements rarely take disease burden into account, limiting the opportunities to add MDA to an already existing water and sanitation project, as was done in Haiti and Guyana. Similarly, the lack of emphasis on the importance of education interventions in the NTD literature reduces the opportunities for collaboration. More research is needed to clearly demonstrate the effectiveness of intersectoral interventions. The LAC NTD Initiative and other global health players must increase advocacy efforts directed at water and sanitation institutions, education stakeholders, ministries of health, and the general public in order to maximize the opportunities for NTD interventions to be integrated with activities in other sectors.

### Concluding Thoughts

Despite the substantial increase in funding and attention that has been directed at combating NTDs in the last 15 years, hundreds of millions of people in the LAC region are still at-risk for contracting these diseases. The LAC NTD Initiative believes that this book will be a valuable resource for donors, advocates, policy makers and program managers who are working to control and eliminate NTDs in LAC and around the world. The experiences, case studies, and analysis presented here offer ideas and best practices for building partnerships for promoting NTD control, and for integrating the management structures, financing arrangements, interventions, and M&E activities of NTD projects and

programs. In addition to sharing the LAC NTD Initiative's experiences with the NTD trust fund and providing detailed accounts of four demonstration projects, this book also highlights important general lessons for practitioners, policy makers, advocates, and donors to take into account and challenges they should expect to face when implementing integrated NTD projects. Most importantly, this book demonstrates that, with careful planning, thoughtful design, and dedicated partnership-building, it is possible to finance, manage, and implement integrated NTD programs that are cost-effective at reducing the burden of these diseases among low-income populations. While this book has generated a significant amount of evidence supporting the viability of integrated NTD programs, the case can be strengthened with more detailed cost comparisons between integrated and parallel interventions, additional research on optimal management structures, and more demonstration projects that test the efficacy of innovative models of integration. The LAC NTD Initiative firmly believes that integrated interventions are the future of the movement that will finally end the immense suffering caused by Neglected Tropical Diseases in LAC and around the world.



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