

**Haiti**  
**Assessment and Recommendations for**  
**the Integration of HIV, TB and Malaria**  
**Final Report**

**29 October 2020**

**Prepared for the Government of Haiti and the Global Fund**



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## Acronyms

AHF	AIDS Healthcare Foundation
ANC	Antenatal care
ART	Antiretroviral Therapy
ARV	Antiretrovirals
ASCP	Polyvalent community health workers (Agent de santé communautaire polyvalent)
ASQF-H	Quality Assurance for Training
CBS	Case Based Notification System
CDAI	Centrales Départementales d'Approvisionnement en Intrants
CDC	Centers for Disease Control
CDR	Community Hospitals
CDT	Centers for Diagnosis and Treatment Center (Centres de Diagnostic et de Traitement)
CHAI	Clinton Health Access Initiative
CMMB	Catholic Medical Mission Board
CS	Health Centers
CT	Treatment Center
DBS	Dried-blood samples
DELR	Direction of Epidemiology, Laboratories and Research (Direction d'Epidémiologie, de Laboratoires, et de Recherche)
DOT	Directly observed therapy
DHIS2	District Health Information Software
DPM/MT	Directorate of Pharmacy, Medicines and Traditional Medicine (Direction de la Pharmacie, du Médicament et de la Médecine Traditionnelle)
DRH	Directorate of Human Resources (Direction des Ressources Humaines)
DRO	Data registration officers
EID	Early Infant HIV Diagnosis
EMR	Electronic Medical Record
EPI	Extended Programme on Immunization (Programme élargi de vaccination)
EQA	External Quality Assessment
GAVI	Global Alliance for Vaccines and Immunization
GF	The Global Fund to Fight AIDS, Tuberculosis and Malaria
GHEKIO	Haitian Study Group on Kaposi's Sarcoma and Opportunistic Infections
GHSC-PSM	Global Health Supply Chain Program-Procurement and Supply Management
GoH	Government of Haiti
HCV	Hepatitis C
HMIS	Health Management Information Systems
HIV	Human Immunodeficiency Virus
HR	Human Resources
ICT	Information and Communication Technology
IDSR	Integrated Disease Surveillance and Response
IEC	Information, education & communication
ISCL	Integrated Supportive Supervision Checklists
JAS	Joint Assistance Strategies

KP	Key populations
LabEQIP	Laboratory Efficiency and Quality Improvement Planning tool
LF	Lymphatic filariasis
LLIN	Long-lasting insecticidal nets
LMIS	Logistics management information system
LNSP	National Public Health Laboratory
LQIT	Laboratory quality improvement tools
MDA	Mass Drug Administration
MESI	National Monitoring and Evaluation Platform
MoF	Ministry of Finance
MoU	Memorandum of Understanding
MSH	Management Sciences for Health
MSM	Men having sex with men
MSPP	Ministry of Public Health and Population (Ministère de la Santé Publique et de la Population)
MTB	Mycobacterium tuberculosis
M&E	Monitoring and Evaluation
NGO	Non-governmental organization
NTD	Neglected Tropical Disease
OHMASS	Organisation Haïtienne de Marketing Social pour la Santé
OSE	Epidemiological Surveillance Officers (Officier de Surveillance Épidémiologique)
PAHO	Pan-American Health Organization
PAP	Port-au-Prince
PCR	Polymerase Chain Reaction
PEP	Post-exposure prophylaxis
PEPFAR	The President's Emergency Plan for AIDS Relief
PITC	Provider-initiated HIV testing and counselling
PIH	Partners in Health
PLWHIV	People living with HIV
PNCM	National Malaria Control Program (Program National de la Contrôle de la Malaria)
PNLT	National Program Against Tuberculosis (Programme National de Lutte contre la Tuberculose)
PNLS	National Program Against AIDS (Programme National de Lutte contre le SIDA)
POC	Point of Care
PPP	Public private partnership
PROMESS	Essential Medicines Program (Programme de Médicaments Essentiels)
PROMESE/CAL	Essential Medicines Program and Logistic Support Central
PSI	Population Services International
PSM	Procurement and Supply-chain Management
PV	Pharmacovigilance
QA/QC	Quality assurance and quality control
RBF	Results Based Financing
RDTs	Rapid Diagnostic Tests
RIF	Rifampicin-Resistance
RSSH	Resilient and Sustainable Systems for Health
SALVH	Suivi Actif Longitudinal du VIH en Haïti

SIGRH	Human Resource Management Information System
SISNU	System d'Information Sanitaire Nationale Unique
SNADI	Système National d'Approvisionnement et de Distribution des Intrants
SOP	Standard Operating Procedure
SPA	Service Provision Assessment Survey
SPHAR-TI	Structured Pharmacovigilance and Training Initiative
SRS	Regional Health Services
STD	Sexually transmitted diseases
STI	Sexually Transmitted Infections
SWAps	Sector-Wide Approaches
TB	Tuberculosis
ToRs	Terms of reference
UAS	Health District Units (Unité Arrondissement de Santé)
UEP	Unit of Studies and Programming (Unité d'Évaluation et de Programmation)
UC	Unité de Contractualisation
UCMIT	Unit of Infectious and Communicable Diseases (Unité de Coordination des Maladies Infectieuses et Transmissibles)
UHC	Universal Health Care
UN	United Nations
UNODC	United Nations Office on Drugs and Crime
USAID	United States Agency for International Development
UGP	Project Management Unit (Unité de Gestion du Projet)
VCT	Voluntary counseling and testing
VL	Viral Load
WB	World Bank
WHO	World Health Organization

## Executive Summary

In many developing countries programs to combat HIV, Tuberculosis (TB), and malaria have been launched and expanded as largely standalone vertical projects, with their own distinct budgets and management teams. In some instances, they also utilize separate procurement and supply chains, laboratories, information systems, and partnerships with non-governmental organization (NGO). The HIV, TB, and Malaria programs may even have their own dedicated facilities and staff. While this has led to important achievements in fighting the diseases, such vertical approaches can be inefficient and duplicative, resulting in costly and unsustainable programs. As these vertical health programs mature and as external financing declines, it is nearly inevitable— and often desirable— that the vertical programs for HIV, TB, malaria, and other areas like immunization be more integrated into the overall health system.

Program integration, especially between the HIV and TB programs, has been discussed in Haiti and been of special interest of the Ministry of Health (MSPP), for many years. To date, the country has made some progress in integration by creating the Unité de Coordination Intégrée (UCMIT), enhancing coordination of lab sample transportation, making efforts to integrate disease-specific information into the national system SISNU (DHIS-2), and merging HIV and TB service delivery in some facilities.

Despite these advances, the national programs for HIV, TB, and Malaria remain heavily siloed. The Ministry of Health (MSPP) can go faster and further in the integration of HIV and TB programs at all levels -- headquarters, regional, and facility -- with help from donors. The appointment of new leaders in the MSPP and the advent of a new Global Fund grant for the three diseases have given impetus to the quest for stronger integration.

Pharos Global Health Advisors was asked by the Government and Global Fund in late 2019 to take stock of the integration situation and explore further possibilities for additional integration. The main objectives were to:

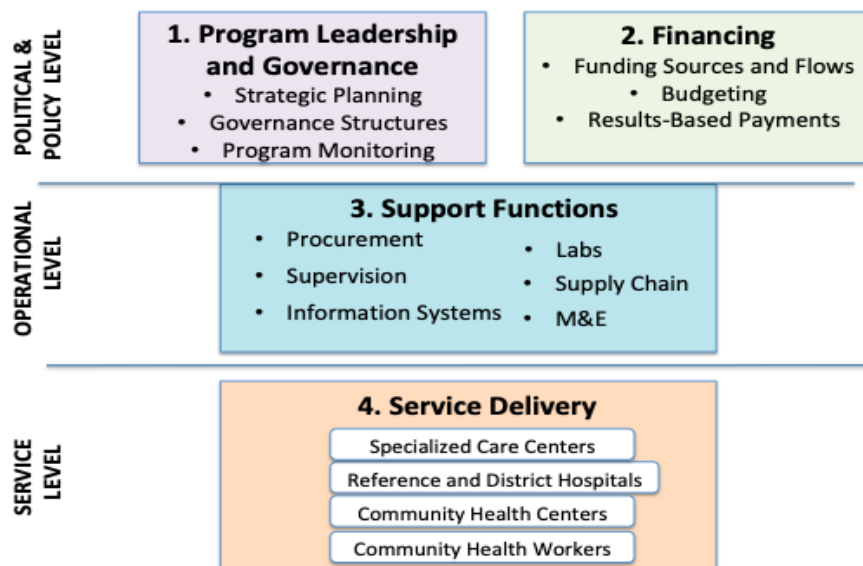
1. Conduct a rapid analysis of Haiti's HIV, TB and malaria programs and the existing degree of integration among them and with the larger Haiti health system
2. Identify new opportunities and assess the potential gains and obstacles to further integration, and
3. Develop a set of priority recommendations to strengthen integration among the three programs and thereby promote increased efficiency and programmatic sustainability.

This report summarizes Pharos's findings and recommendations. It is based on a comprehensive literature review covering more than 70 documents (Annex A) and on information from more than 40 remote and in-person interviews (Annex B). The in-person interviews were carried out during Pharos's two visits to Haiti in December 2019 and March 2020. Further discussions took place via Zoom after the Covid-19 imposed ban on travel. The team's recommendations were also informed by a systematic review of international best practices and several rounds of feedback.

The Pharos team composed of Diana Gonzalez, Walter Gabriel, Diana Bowser, Sunil Parikh, Charles Patrick Almazor, and Robert Hecht is grateful to a wide range of stakeholders for their support and input, including from MSPP, Haitian NGOs, donor partners, international technical agencies, and the Global Fund Haiti team.

The analytical framework for the study covered four domains for greater integration: (1) Program Leadership and Governance; (2) Financing; (3) Support Functions/Health System Strengthening; and (4) Service Delivery. This framework aligned well with the vision and suggestions of the Haitian Health Ministry's UCMIT (Annex C).

## Analytical Framework for Integration



This report highlights 13 priority areas where the Government and its partners have opportunities to implement a more integrated approach to the national HIV, TB, and Malaria responses. These opportunities are mainly related to Health Systems Support Functions but also touch on Leadership and Governance, Financing, and Service Delivery. They include recommendations related to:

1. Laboratory sample transport
2. Point of care testing
3. Health information systems
4. Training
5. Supportive supervision
6. Disease surveillance and reporting
7. Pharmaceutical storage
8. Joint TB and Malaria diagnostic testing
9. Program management and monitoring
10. Donor coordination
11. Results-based financing
12. Targeted services for incarcerated populations
13. Combined facility level delivery of HIV and TB diagnosis, counseling, and treatment

These 13 areas are covered in the table below, which summarizes the current situation and describes what enhanced integration would look like. More details are contained in the diagnostic sections of Chapters 2 and 3.



## Summary of key integration opportunities for HIV, TB and malaria

Opportunity	Description
<p>Opportunity #1: Strengthen integrated knowledge and use of the lab sample transportation system</p>	<p>In an example of inter-donor funding and donor-government coordination, the LNSP, PEPFAR/CDC, WB and the Global Fund have created a robust transport system which allows for transport of HIV DBS from peripheral labs and TB samples from TB specific sites or HIV/TB integrated sites (either samples for culture or microscopy slides for QA/QC). All samples are sent to the central LNSP and GHESKIO site in Port-au-Prince (PAP) two times per week.. However, the system is not prepared to handle political and environmental emergencies. In addition, there is insufficient monitoring of the system, which reduces the confidence of key partners such as PIH and potentially leading to inefficiencies in the system. At the moment, there is no dedicated transport available for malaria samples. While widespread testing of malaria DBS (or RDTs) for drug resistance serology is not yet occurring, this system may also serve as a transport network for such samples in the future when monitoring is implemented. Sample transport needs to be strengthened with buy-in for HIV, TB and Malaria.</p>
<p>Opportunity #2: Integrate POC testing platforms for TB, HIV VL, Hep C, EID and STI</p>	<p>Currently 41 Gene-Xpert machines in Haiti are only being used for TB testing (at about 32% capacity)<sup>1</sup>, even though these platforms have the potential to be deployed for HIV Viral Loads (VL), Early Infant HIV Diagnosis (EID), Sexually Transmitted Infections (STIs) and Hepatitis testing, as well as other infectious diseases such as MRSA, Norovirus, Group A Streptococcus, and even SARS-CoV-2.. To leverage this lab infrastructure to increase POC testing, Haiti must map the distribution of HIV and TB burden to determine the optimal distribution and use of Gene-Xpert machines and improve the supply chain for GeneXpert cartridges and stock cards.</p>
<p>Opportunity #3: Increase interoperability of both aggregated and disaggregated health information systems for the three diseases</p>	<p>While there have been many investments in data systems for EMRs (PIH, GHESKIO, i-sante), there is still a lack of interoperability across the HIV data systems. An initial step would be to create interoperability between the aggregated MESI data, the SALVH, and SISNU (DHIS2-based national health information system). DAI has developed a programming language to make these databases interoperable and the CDC has also agreed to collaborate with the GF- Population Services International (PSI) and the UEP to implement the interoperability. The sustainability of the multiple case-base notification systems (Malaria-tracker, TB-tracker, other trackers) is uncertain due to financial constraints and data quality management issues – efficiency could be increased by integrating these and other future trackers into a single platform that can be accessed for all the diseases and managed by the UEP.</p>
<p>Opportunity #4. Promote joint training for health care providers and lab staff</p>	<p>In-service training for HIV, TB and malaria is siloed in each disease area. In addition, facilities do not have a clear understanding of who has been trained or in what areas. Different government units (i.e. Programs, Directorates, UGP, LNSP) and donors (CDC, CHAI, USAID) offer trainings to different health cadres (field agents, nurses, physicians) on different topics. Facilities are overloaded, with some participating in a dozen different trainings per year. A study needs to be conducted to understand the number of trainings, who has been trained, the cost, funding source, and content of trainings to determine efficiencies as well as integration opportunities as part of a comprehensive plan. More discussion is needed on who is responsible for developing training content and executing the training. A pool of certified trained technicians for microscopy for malaria and TB should</p>

<sup>1</sup> Updated Report GeneXpert 2019 Spot Check for HTI-C-PSI.

	be formed/maintained and based at Level 2 labs so that QA/QC can be performed more efficiently as malaria cases decrease.
Opportunity #5: Combine supportive supervision for the three diseases	Supportive supervision remains fragmented at the facility and departmental levels as separate visits from the HIV, TB and malaria programs are made to the same facility for supervision. Supervisory visits for HIV and TB are conducted by different partners (CDC, USAID, PSI) and government entities (PNLS, PNLT and departmental program authorities). The role of central and departmental offices in supervision is not always clear. Efficiencies can be gained through integrated supervisory visits that would include several programs at the same time, with a clear logistical organization. A plan is required covering: who will conduct the visits, where they will be carried out, content area (clinical and health system focused), and mechanisms for follow-up on noted issues. One option would be to have the UCMIT as a coordinating body for field supervision. It would need to create supervision manuals, SOPs, and reporting format (currently paper-based).
Opportunity #6: Integrate the disease surveillance workforce	Malaria surveillance (case detection, foci investigation, travel history) requires a similar skill set as for TB contract tracing, as well as for outbreak investigation (viral outbreaks such as Zika, dengue, Covid-19, etc.). The surveillance workforce (OSE, with additional smaller numbers of ASCPs) need to be trained in principles of surveillance for malaria and TB, as well in data entry in the disease tracker tools. This cross-disease surveillance would reduce staffing costs and make surveillance more sustainable as diseases burden falls and donor aid is replaced with national funding.
Opportunity #7: Merge pharmaceutical storage facilities and systems	Currently, PEPFAR and GF both utilize the same firm (Chemonics) for central supply storage with delivery direct to facilities. In contrast, TB and Malaria utilize the Programme de Médicaments Essentiels (PROMESS) and additional layers of storage to get to the facility level (1-2 depots per departement). The GF also has a third facility in Tabarre to stock ambient products (LLINs, condoms/lubricants) and expired drugs because of shortage of space in the other two warehouses. There is interest from the MSPP and certain donors in building a single unified storage facility, but the cost may prove to be prohibitive at this stage. In the meantime, the GF is supporting technical assistance to assess the short-term option of having a single third-party entity managing the different storage facilities and develop an integrated LMIS. Nevertheless, there is a need to organize joint national stakeholders' consultation meetings to discuss the different models and decide jointly on the short-term plans to strengthen the overall storage and distribution system (public, private, or mixed).
Opportunity #8. TB and malaria microscopy integration	Malaria microscopy proficiency and availability is declining. Microscopy must be maintained and performed at high quality to achieve malaria elimination, confirm RDT testing in a subset of samples, and estimate parasite density in severe malaria cases. Little interaction between the malaria and TB microscopy programs in terms of personnel or QA/QC is in place. A pool of certified trained technicians for microscopy for both malaria and TB should be formed/maintained and be based at Level 2 labs so that QA/QC can be performed more efficiently.
Opportunity #9: Strengthen multi-disease leadership and governance at central and departemental level	While the majority of actors interviewed recognized that the cohabitation of programs under the UCMIT has helped improve coordination, they also suggested that the UCMIT needs to have a more clearly defined role and to have stronger capacity if it is to go further with integration of HIV, TB, and Malaria leadership. Possible areas for expansion could include: integrated strategic planning, monitoring, supervision, human resources and training, and communication with other MSPP units and external partners. Establishing a roadmap to develop the organizational structure of the UCMIT for the next five years would be the logical next step.
Opportunity #10: Promote expanded donor coordination within and across HIV, TB and Malaria	Following the example of the sample transportation system, donors can go further in improving joint planning, implementation, and monitoring, thus increasing efficiency and avoiding duplication. Groups of donors, working with MSPP, could focus on each of the health systems strengthening areas highlighted above, e.g., information systems,

	warehousing/supply chain, surveillance, etc. Key steps in coordination used for lab sample transport included: establishing a clear plan with ToRs; signing an MoU; setting up accountability mechanisms; and harmonizing funding (managed through the UGP). Other programs as the PEV could also benefit from this effort.
Opportunity #11: Use existing results-based financing tools to promote integration in PHC	At present RBF covers 150 facilities in 8 departments (except the Ouest and Southeast). Performance is verified by an external firm and payments are disbursed every quarter. The project is endorsed by the WB, US Government, and Canada. An impact evaluation is ongoing, and results are expected by the end of June 2020. If the study demonstrates that RBF is incentivizing better quality and health outcomes, more HIV, TB, and malaria indicators could be added to promote greater and faster integration. The current set of indicators do not include quality metrics for HIV, underrepresent malaria (currently not considered as part of the primary care level indicators), and could be improved for TB to focus on coinfection and loss to follow up.
Opportunity#12: Create/expand an integrated package of services for incarcerated populations	Haiti's prisons are badly overcrowded, leading to major epidemics of TB and Malaria as well as HIV. By 2019, HIV prevalence among the incarcerated was 4.4%, TB incidence was 20 times higher than in the general population, and malaria represented 34% of the illnesses diagnosed in prisons. At present HIV and TB are only treated in 6 of Haiti's 17 prisons in-country through the organization "Health Through Walls", with support from PEPFAR, AHF and the GF. A more comprehensive package of HIV, TB, Malaria, and other interventions (Hep C, STIs) needs to be delivered in all prisons for the benefit of inmates and of the rest of the Haitian population, given the movement of people in and out of prisons.
Opportunity#13: Reinforce and expand integrated TB-HIV services	HIV-TB coinfecting patients are treated for TB at some but not all HIV clinics and receive a higher quality of care for TB than in facilities that only offer TB diagnosis and DOTS. This is mainly because of weaker funding for TB as a standalone service. In some HIV clinics there is a lack of TB services and patients must be referred to TB clinics, leading to high rates of loss to follow-up. As part of the larger effort to expand coverage and impact of the TB program, all sites in Haiti offering HIV care should also test and treat for TB. This could follow the "Hopital La Paix" model. Some facilities only receive funds for one disease or the other or must manage money for the two diseases from different sources, leading to fragmentation and gaps, leading to e.g., 8 hours shifts for HIV and 2 hour shifts for TB. Reorganizing the funding flows for HIV/TB clinics would help improve integration of care.

These 13 recommendations were included in Haiti's funding request to the Global Fund for the 2021-2023 period, and are being fleshed out and operationalized as part of the ongoing grant-making process. Pharos would urge the Government, Global Fund, and other partners to develop detailed action plans for the implementation of each of the recommendations. Financing from the MSPP, Global Fund, PEPFAR, and other sources should also be allocated and budgeted for each integration opportunity, and a lead government agency and manager assigned to each opportunity, so that accountability is clearly established.

A limitation of this study was its timing and the consequent inability to conduct a full in-person validation workshop in Port-au-Prince because of the twin crises that took place in Haiti in 2020: the political breakdown of late 2019 and early 2020 and consequent civil unrest, and the COVID-19 pandemic which broke out in March 2020 and continues to today. Both crises largely closed Haiti to visitors and hampered movements within the country. Despite these two concurrent tragedies, Pharos managed to complete its analysis and partially validate its findings and recommendations with the UCMIT and the Global Fund, using Zoom and other remote means. As soon as the COVID-19 situation improves and travel to Haiti is permitted, the integration roadmap discussed in Chapter 4 of this report should be further workshopped and endorsed by the main Haiti stakeholders.

# 1. Introduction and Motivation

## 1.1 *Problem Statement, Rationale for Study and Main Objectives*

### 1.1.1 The problem and opportunity

In many developing countries, programs to combat HIV/AIDS, Tuberculosis (TB), and malaria have been launched and expanded as largely standalone vertical projects, with their own distinct budgets, management teams, supply chains, laboratories, monitoring and evaluation (M&E), information systems, non-governmental organization (NGO) partnerships, facilities and staff. While this has led to important achievements in fighting the diseases, such vertical approaches can be highly inefficient and duplicative resulting in costly and unsustainable programs. As vertical health programs mature and as external financing declines, it is nearly inevitable— and perhaps desirable— that the vertical programs for HIV/AIDS, TB, malaria, and other areas like immunization be integrated into the overall health system. From this integration, countries can benefit more from health system strengthening investments which could help them to prepare for any emerging disease or outbreak, such as the current COVID-19 pandemic.

Program integration, especially between the HIV and TB programs, has been historically discussed in Haiti and has been of special interest of the Ministry of Health (MSPP) for many years. In previous years the country has experienced significant progress in several areas such as the governance of infectious-disease programs through the creation of the UCMIT, the enhanced donor coordination to support the lab sample transportation system, the efforts to integrate disease-specific information systems into the SISNU (DHIS-2) and the implementation of HIV-TB service delivery, both by the government and other implementing partners.

Despite these compelling examples, the PNLS, PNLT and PNCM remain as heavily siloed programs and face several challenges towards a greater integration. For instance, while the UCMIT has started to coordinate HIV/TB collaborative activities through the creation of a “Cellule de Cooperation VIH-TB”, this entity lacks an operational plan and (for HIV) a budget, limiting the scope and impact of its interventions. Since the three programs report to the Global Fund and PEPFAR as grant subrecipients, programmatic budget planning is not fully coordinated, and the three programs maintain largely separate systems for M&E and supportive supervision. The MSPP has an opportunity to go faster and further in the integration of HIV and TB programs at the facility level. Donors also need to better coordinate and play a greater role as integration promoters, since their implementation of grants and contracts through a wide range of implementing agencies has been one of the main contributors to the existence and permanence of these “silos.”

Evidently, Haiti still has a long way to go towards integration. More efforts are needed to roll-out some of the best practices at the national level and to address integration especially regarding support functions and service delivery at the point of care. The recommendations emerging from this work have taken into consideration budgetary and capacity constraints of the MSPP and, overall, the unique Haitian context.

### 1.1.2 Rationale – Why working on integration in Haiti now?

Finding more opportunities for integration represents a pressing need for the myriad of stakeholders supporting the national responses to HIV, TB and malaria in Haiti – from government officers, to donors and implementation partners. The reason of this urging interest relates to the impending donor funding decline and the need to create technical efficiencies that would allow the government to reduce costs. This savings could be reinvested in the responses to expand coverage or increase quality of care. From the government perspective, the final integration goal is to reach a greater integration to the primary healthcare system, as reflected by its strategic goals.

The Global Fund to Fight AIDS, TB and Malaria (The Global Fund) endorsed this project as a way to rethink its programmatic approach in Haiti and to explore whether greater integration is feasible and could lead to more efficient, effective, and sustainable delivery of services in pursuit of national targets for reducing the burden of the three diseases. Some of the recommendations of this work are meant to be used by local stakeholders to inform the grant making process following the successful Global Fund funding request. These recommendations are especially important for this grant cycle because the Global Fund will fund a new Resilient and Sustainable Systems for Health (RSSH) grant in Haiti that will be managed by the MSPP.

### 1.1.3 Study objectives

The purpose of this study is to analyze the potential for integration of Haiti's HIV/AIDS, TB and malaria programs. Working towards integration brings about several questions such as: (1) what are the current opportunities and challenges for integration; (2) what are the potential benefits from integration; and (3) how can these opportunities be mobilized to ensure a maximal impact for the people of Haiti?

This in-depth review is designed to answer all three by:

4. Conducting a rapid analysis of Haiti's HIV, TB and malaria programs, with a special focus on opportunities to promote greater integration at national, subnational, and facility site,
5. Estimating the potential efficiency gains as well as the obstacles to such integration, and
6. Developing recommendations to strengthen integration among the three programs and promote increased efficiency and programmatic sustainability.

This study was developed in close consultation with the major stakeholders (Haitian public and NGO actors, GF, PEPFAR (USAID and CDC), World Bank, PAHO, UN Foundation and CHAI, among others) to document their experiences, views, advice and feedback.

## 1.2 Methods

This review derives from a mixed methods analysis using information collected from an extensive literature review and qualitative information from phone and in-person interviews. The literature review included more than 30 documents, from both published and grey literature, including local and global sources (see Annex A for the complete list of documents). Information from these documents was used to identify integration opportunities, as well as to support and validate the results of the key informant interviews. Our team also reviewed international best practices to inform our recommendations or to point to successful examples that Haiti could further consult during the implementation phase.

The qualitative analysis utilized key informant interviews at various levels of the health system and across major governmental and non-governmental stakeholders in order to measure the current level of interest, past integration experiences and practices, as well as areas where integration processes can be improved. We interviewed individuals from the MSPP, the World Bank, donors, private sector and NGOs – such as Partners in Health (PIH), the Haitian Study Group on Kaposi's Sarcoma and Opportunistic Infections (GHESKIO), OHMaSS (Organisation haïtienne de marketing social sur la Santé) – local implementer of PSI, Fondation pour la Santé Reproductrice et l'Éducation Familiale (FOSREF), Centres de Développement et de la Santé (CDS), and Fondations Esther Boucicault Stanislas (FEBS). Field visits also allowed us to interview providers and a non-representative sample of users (Annex B provides the complete list of interviews). All the information was collected using a standardized interview tool.

The information collected through the literature review and the phone interviews was used to guide the in-person interviews carried out during our team’s first in-country mission to Port-Au-Prince on December 2019 and our second in-country visit on early March 2020. During our second mission, we collected more detailed information to back up our integration recommendations and tested our hypotheses with different actors involved in the Responses.

### *1.3 Brief Discussion of Integration*

#### *1.3.1 Our working definition of ‘integration’*

Integration may refer to several processes or outcomes, such as incorporating aspects of HIV, TB, and malaria programs into one another, into other existing vertical health programs, or into the overall primary health system. Integration could also refer to increased alignment and decreased boundaries among NGO partners and between NGO-run programs and MoH-led programs.

The Global Fund, during the 2nd Meeting of the WHO GCM/NCD Working Group on the Inclusion of NCDs in other Programmatic Areas in 2016, noted that integration can apply at numerous points, including (i) between preventive and curative services, (ii) across service delivery at the facility level (iii) continuity of care over time, (iv) vertical integration of different levels of service, (v) across sectors such as health, agriculture, and education (vi) combining funding and service provision, and (vii) at policy, planning, programming and budgeting levels.<sup>Error! Bookmark not defined.</sup> Alternatively, Atun et al define integration as “the extent, pattern, and rate of adoption and eventual assimilation of health interventions into critical health system functions, which include inter alia: (i) stewardship and governance, (ii) financing, (iii) planning, (iv) service delivery, (v) monitoring and evaluation (M&E), and (vi) demand generation”.<sup>2</sup>

In approaching this work, the team has taken elements from the aforementioned definitions of integration and applied them to inform the definition used for this report. We believe that this definition best describes integration with respect to this project:

*The consolidation of resources (financial, human and technical) ...*

- *Within a single-disease-focused program which has multiple funders and implementers [1];*
- *Across several disease-focused programs [2]; and*
- *Between disease programs and the rest of the health system, especially but not limited to other areas of primary care [3]*

*...in order to promote greater collaboration and alignment; enhance the quality of care, program sustainability, and overall health system strengthening; and increase the efficiency and effectiveness of investments in the disease program areas*

*[1] For example, integrating HIV investments funded by PEPFAR with those funded by the Global Fund, or integrating NGO-led HIV services with Government-managed HIV services in the same country*

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<sup>2</sup> Rifat Atun, Thyra de Jongh, Federica Secci, Kelechi Ohiri, Olusoji Adeyi, Integration of targeted health interventions into health systems: a conceptual framework for analysis, *Health Policy and Planning*, Volume 25, Issue 2, March 2010, Pages 104–111, <https://doi.org/10.1093/heapol/czp055>

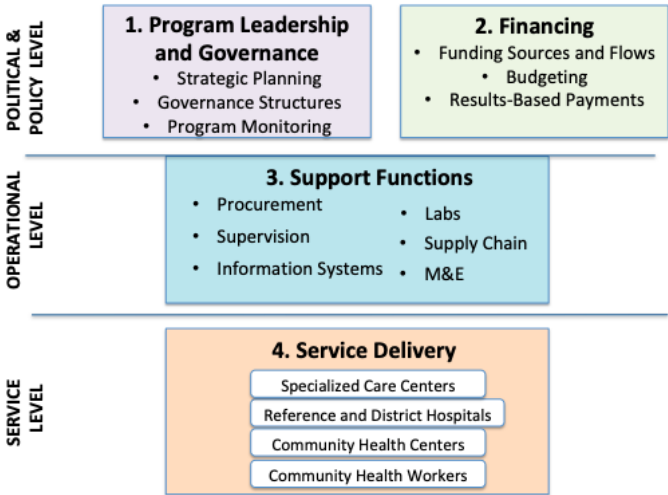
[2] For example, integrating HIV and TB screening and treatment within the same facility or community-based health program

[3] For example, integrating malaria screening and treatment with pre-natal and newborn care; or integrating TB lab services fully within the national laboratory system

1.3.2 Our Analytical Framework

We have identified four broad domains for potential integration efforts: (1) Program Leadership and Governance; (2) Financing; (3) Support Functions/Health System Strengthening; and (4) Service Delivery (see Figure 1) which fall into three levels: service, operational, and policy. These domains are broken down in sub-areas that guided our qualitative analysis via interviews with key stakeholders and literature review. It is worth noting that this framework is compatible with that proposed by the UCMIT (Annex C).

Figure 1. Integration Analytical Framework



**Domains 1 (Program Leadership and Governance) and 2 (Financing)** occur at the policy level and are stewarded by the GoH in collaboration with stakeholders such as the Global Fund and PEPFAR which finance the response to the three diseases. Program Leadership and Governance relates to the actual organizational structures, strategic planning, and other oversight functions like Program Monitoring. Financing analyses the financial sources, flows, plans/reports and incentives and the ways in which they support or not donor integration. This is especially relevant for Haiti since donors still fund a large share of the infectious-disease responses. Both domains are key when analyzing integration. Program Leadership and Governance is relevant since it sets the tone of integration at the subnational and facility levels, while Financing provides the mechanisms and incentives promoting or preventing greater integration.

**Support Functions/Health Systems Strengthening (Domain 3)** occurs at the operational level and involves implementation partners who operationalize the response to the three diseases dependent on policy and financing decisions. These functions involve procurement, labs, supply chain, supervision, information systems, and monitoring and evaluation (M&E). This domain is where most of the opportunities for integration are and where greater efficiency gains could be expected. The redundant investment could be reinvested in training and

building local human resource capacity which has been pointed out by local stakeholders as one of the key historical disadvantages of donor aid in Haiti.

**Service Delivery (Domain 4)** and its quality and quantity rely on supporting functions at the service level. This domain broadly encompasses any care delivery and as such is comprised of facilities ranging from community health centers to reference hospitals and specialized care centers while also encompassing community health workers which operate outside of facilities but provide care at a primary level.

## 2. Background

### 2.1 Country Health Situation

Haiti is a low-income country with a GDP per capita of US \$870 in 2018. The country is the poorest in the Western Hemisphere and ranks 163rd out of 188 countries in the human development index. Of Haiti's population of 11 million people, 6 million live below the poverty line on less than \$2.41 per day. In addition, Haiti faces severe macroeconomic challenges associated with low annual growth rates (1.2%-1.5%), high inflation rates (~20%) and an increasing public deficit.<sup>3</sup>

The Haitian health system is vulnerable to issues affecting the country, including hurricanes, earthquakes, and political instability. Haiti's people and health system recently faced a difficult recovery from the 2010 earthquake and subsequent cholera epidemic. Since then, major improvements have occurred, such as the expansion and strengthening of the disease surveillance system and enhancement of laboratory capacity.

Several partners have had a significant role in the recovery of the health system post-earthquake. However, since the second half of 2019, fuel shortages, road closures, and protests have stricken Haiti nearly daily. In this difficult political climate, facilities have struggled to receive supplies such as fuel and oxygen and routine hospital services such as caesarean section have become less reliably available<sup>4</sup>. This widespread instability and lack of political leadership endangers not only day-to-day health seeking but also the prospect for long-term health system reform and improvement.

The MSPP, the responsible steward of the health system, has central offices in the capital and directorates in each of the country's 10 health departments, which are further divided into 140 communes composed of 570 communal sections.<sup>5</sup> The development and implementation of the Health Master Plan 2012-2022 frames the work of the MSPP. In addition to the 10 health departments, in 2012 the MSPP proposed a new subdivision, District Health Units (Unités d'Arrondissement de Santé) based in the country's 42 districts. These units are mandated to coordinate the health network at the primary care level. The health units' capacity to fulfill their mandate varies from department to department, mainly due to shortages of human resources.

Haiti's healthcare delivery system is structured into three levels: approximately 900 health centers and 47 community reference hospitals provide primary care; 8 departmental hospitals provide secondary care; and six

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<sup>3</sup> World Bank (2018). World Bank Country Overview. Retrieved from: <https://www.worldbank.org/en/country/haiti/overview>

<sup>4</sup> "MSF opens a trauma hospital in Port-au-Prince as health crisis in Haiti deepens." 3 December 2019.

<sup>5</sup> Haiti Health Master Plan; 'Plan Directeur de Santé (2012-2022)'



university hospitals and three specialized centers provide tertiary care.<sup>6</sup> Of 1,033 health facilities surveyed by the Service Provision Assessment (SPA, French acronym EPSS) in 2017-18, approximately 33% are public, 30% are private for-profit, 17% are private non-profit and 18% are mixed (public and NGO). Moreover, 36% of the facilities are in urban areas with 50% of these located in Port-au-Prince.<sup>7</sup> Both for-profit and non-profit private facilities have a significant presence in Haiti, especially in urban areas, but are not well coordinated with the public sector. Health delivery in Haiti is highly fragmented, with NGOs providing an estimated 70% of healthcare.<sup>8</sup>

Haiti has limited fiscal space to invest in health, including health system strengthening and disease-specific programs. Only 4.4% of the national public funds are allocated to the health sector, well below the pre-earthquake share of the national budget devoted to health of 16.6% in 2004.<sup>9</sup> Most spending comes from either out-of-pocket payments or from donor aid. In 2016, 41.7% of current health expenditure (CHE) was financed out of pocket<sup>10</sup> and 38.4% from donors<sup>11</sup>. Moreover, as recently as 2018, domestic general government health expenditures amounted to less than 1% of GDP, well below the levels of other countries in the region (**Error! Reference source not found.**).

**Table 1. Domestic General Government Health Expenditure, 2016**

Country	Percentage of GDP
Haiti	0.8%
Guatemala	2.2%
Dominican Republic	2.8%
Jamaica	3.7%
Honduras	3.9%
World (average)	7.4%

Source: World Bank (2018).<sup>12</sup>

Partly due to low levels of spending on health, Haiti has suffered from a lack of high-quality primary health care. As evidenced by the SPA 2017-2018, basic services – childhood immunization services, monitoring of child growth, any modern method of family planning, antenatal and service for sexually transmitted infections (STIs) -- were available in only about half (51%) of dispensaries, 44% of health centers with beds, and 34% of health centers without beds<sup>13</sup>. Many of these facilities also lacked access to basic resources such as consistent electricity, clean water, and internet service.<sup>14</sup>

<sup>6</sup> Service Provision Assessment 29 Data: Haiti Facility Survey (HT\_FACILITY)

<sup>7</sup> Haiti EPSS 2017-2018 pp. 18-20

<sup>8</sup> Thinkwell 2012. An Assessment of the Haitian MSPP's Readiness to Establish a Contracting Function. <https://thinkwell.global/wp-content/uploads/2014/11/An-Assessment-of-the-Haitian-MSPPs-Readiness-to-Establish-a-Contracting-Function-ThinkWell.pdf>

<sup>9</sup> World Bank (2017). <https://www.worldbank.org/en/news/press-release/2017/06/26/haiti-new-world-bank-report-calls-for-increased-health-budget-and-better-spending-to-save-lives>

<sup>10</sup> World Bank (2019). Retrieved from: <https://data.worldbank.org/indicator/SH.XPD.OOPC.CH.ZS?locations=HT>

<sup>11</sup> ibid

<sup>12</sup> World Bank (2018). World Bank Data. Retrieved from: <https://data.worldbank.org/indicator/sh.xpd.ghed.gd.zs>

<sup>13</sup> Haiti EPSS 2017-2018 p 9.

<sup>14</sup> Haiti EPSS 2017-2018 p.10

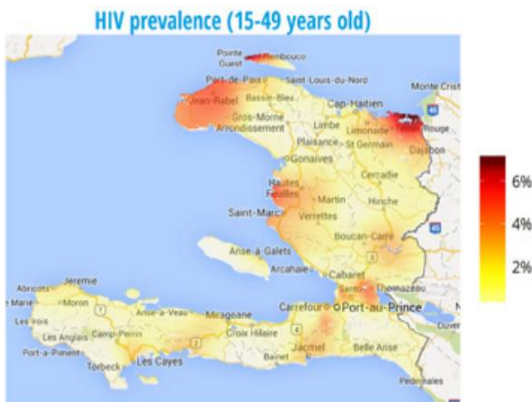
## 2.2 Epidemiology of the Three Diseases

### State of the HIV epidemic

With an HIV prevalence of 2% for adults 15-49 years of age, Haiti continues to be one of the most highly HIV-affected regions in the western hemisphere. In total, an estimated 160,000 Haitians live with HIV and 7,300 new infections occurred (0.69 new infections per 1000 population) in 2018 and 5,600 in 2019<sup>15 16</sup>. The incidence rate of HIV in Haiti decreased by 17% and HIV-related deaths have decreased by 45% between 2010 and 2018.<sup>19</sup> Despite this progress, the incidence: prevalence ratio is 5%, above the 3% benchmark set by UNAIDS as an indicator of epidemic transition.

Among Haitians, young women and those in urban and northern areas are at elevated risk of HIV. Of the 160,000 people living with HIV (PLHIV) in Haiti in 2018, 58% (87,000) are women. The HIV epidemic is concentrated among adult Haitians, with an estimated prevalence of just 0.25% in children under age 15. Women are at higher risk than their male counterparts: 70% of the estimated 17,200 15-to-24-year old living with HIV are young women. Moreover, the prevalence of HIV among adults varies by region with the Artibonite (2.7%) and Nord (2.6%) districts showing a higher prevalence relative to other districts. HIV prevalence is also elevated in the urban centers of Port-Au-Prince and Saint Marc. A detailed map of the distribution of HIV is shown in **Error! Reference source not found.** below.<sup>17</sup>.

**Figure 2. HIV Distribution in Haiti**



Key populations (KPs) are also disproportionately affected. As recently as 2014, of the estimated 30,900 men who have sex with men (MSM), 12.9% lived with HIV. Among the estimated 70,300 female sex workers (FSW) the HIV prevalence was 8.7%.<sup>18</sup> The prevalence among prisoners (3.8%) is also higher than that of the general population.

Testing and treatment of pregnant women is key to prevent HIV transmission. In 2018, 83% of the 5,900 pregnant women in Haiti who were in need of ARVs for the prevention of mother to child transmission (PMTCT) received them, leaving 17% of babies born to HIV-positive mothers at significant risk for HIV infection.<sup>19</sup>

Nevertheless MTCT has decreased in the last five years from 15.8% in 2015 to 11.5% in 2019, as a result of expanded coverage to an estimated 85% of pregnant women.<sup>20</sup>

Haiti requires substantial further progress to reach the 90-90-90 goals set by the WHO. In 2019, 79% of PLHIV knew their status, 92% of those who knew their status were on treatment (~111,116 patients), and approximately

<sup>15</sup> Haiti HIV Status UNAIDS, retrieved 2019

<sup>16</sup> Government of Haiti (2020). HTW 2018. Funding request for the Global Fund

<sup>17</sup> UNAIDS Subnational Estimates for Haiti, 2014

<sup>18</sup> Surveillance biologique et comportementale utilisant la méthodologie respondent driven sampling (RDS) auprès des Travailleuses de Sexe (TS) Ministère de la Santé Publique et de la Population (MSPP) / Organisation Haitienne de Marketing Social pour la Santé (OHMASS), Haiti 2014

<sup>19</sup> <https://www.unaids.org/en/regionscountries/countries/haiti> Retrieved December 2019.

<sup>20</sup> Government of Haiti (2020). HTW 2018. Funding request for the Global Fund.

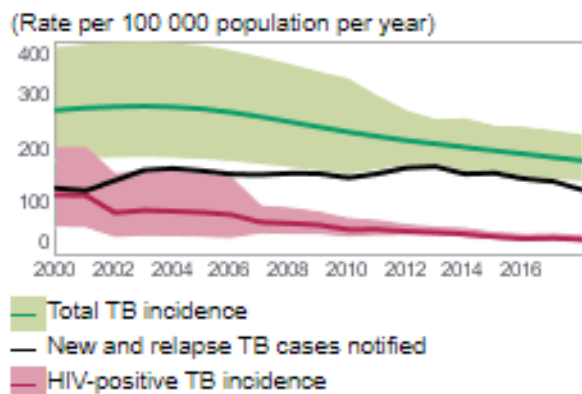
46% of those had achieved viral suppression, according to the MSPP (PEPFAR COP reports 76% VL suppression rate for the first quarter of 2019).<sup>21 22 23</sup> The higher percentage of PLHIV on ARVs is attributed to the systematic implementation of test-and-treat in all 166 HIV treatment sites.<sup>24</sup> Treatment coverage differs by age and biological sex. Only 40% of children under 15 in Haiti who know their positive status received ART. While women in Haiti are at higher risk for HIV than men, ARV coverage was higher for women (63%) than men (52%).<sup>19</sup> Regular HIV drug resistance testing is yet not available in Haiti. However, a recent PEPFAR study estimates 40% of patients have resistance to either nucleoside reverse transcriptase inhibitors (NRTI) or non-nucleoside reverse transcriptase inhibitors (NNRTI) and 7 % have resistance to both.

Over half the Haitian population holds views that indicate stigma against PLHIV. Among adults, 64% responded they would not purchase vegetables from a vendor whom they knew had HIV, and 54% said that children living with HIV should not be allowed to attend school with uninfected children. Any interventions addressing HIV will face the challenge of adapting to and fighting this stigma.

HIV and TB often occur comorbidly, including in the Haitian context: in 2018, 14% of patients with TB also were positive for HIV. Haiti has made strides in increasing the percentage of HIV/TB coinfecting individuals receiving treatment. The percentage of coinfecting patients receiving treatment for both diseases rose from 54% in 2015 to 86% in 2018, with 92% patients also receiving co-trimoxazole (CTX) in 2019.<sup>25</sup> TB-related deaths among PLHIV declined from 1,700 in 2010 to 710 in 2017, potentially related to the improvements in access to treatment.<sup>26</sup>

### State of the Tuberculosis epidemic

**Figure 3. TB incidence and relapse cases (2000-2016)**



The incidence of TB in Haiti declined from an estimated 221 cases per 100,000 population in 2010 to 176 cases per 100,000 population (13,713 notified cases) in 2018.<sup>27</sup> The TB mortality rate shows also a sharp and steady decrease in recent years, going from 25 per 100,000 in 2015 to 9.2 per 100,000 in 2018.<sup>28</sup> For HIV/TB infection the mortality rate was 7.7 per 100,000 people.<sup>34</sup> Case-detection has been impacted by political unrest during the past two years, falling from 78% in 2015 to 68% in 2019). Moreover, TB diagnosis among children (under 15 years old) is still limited, especially given the lack of X-rays and the use of alternative diagnosis methods (i.e. GeneXpert tests).

<sup>21</sup> Ibid.

<sup>22</sup> Les Grandes Réalisations du MSPP (mars 2017- juin 2019)

<sup>23</sup> PEPFAR (2019). Country Operational Plan (COP) 2019, Strategic Direction Summary.

<sup>24</sup> Government of Haiti (2020). HTW 2018. Funding request for the Global Fund.

<sup>25</sup> Government of Haiti (2020). HTW 2018. Funding request for the Global Fund.

<sup>26</sup> WHO 2017 TB Estimates

<sup>27</sup> Global TB report 2019

<sup>28</sup> Government of Haiti (2020). HTW 2018. Funding request for the Global Fund.

In 2019 the incidence rate of coinfection with both TB and HIV was estimated to be 15.6 per 100,000 people (95% CI: 20-34) and has been relatively steady since the early 2000's<sup>29</sup>. Figure 3 illustrates these trends, in addition to the trend in TB case notification rate.<sup>30</sup> HIV testing in TB patients is nearly universal, increasing by 24 percentage points since 2011 and reaching 97% in 2019.<sup>31</sup>

Like HIV risk, TB risk is not homogeneous throughout Haiti. The TB REACH project recently measured an incidence rate of greater than 1000 cases per 100,000 people in a slum of Port-au-Prince, six times the national average<sup>32</sup>. The poor and those who are internally displaced are likely at a higher risk of TB given their living conditions and inability to access TB diagnostics and treatment, which can catalyze the spread of active TB. Additionally, TB infection varies by both age and biological sex in Haiti as adults over age 14 and males have higher incidences of TB than women, as illustrated in **Error! Reference source not found.**<sup>33</sup>

**Table 2. Estimated TB incidence, by age and sex, 2017.**

Estimated TB incidence by age and sex (thousands)*, 2017			
	0-14 years	> 14 years	Total
Females	1 (0.64–1.5)	7.8 (4.7–11)	8.8 (5.7–12)
Males	1.2 (0.71–1.6)	10 (6.1–14)	11 (7.2–15)
Total	2.2 (1.6–2.8)	18 (13–23)	20 (15–25)

Source: WHO TB Estimates (2018).

In Haiti, 2.1% of newly-diagnosed TB cases and 14% of previously-treated cases are multi-drug resistant/rifampicin resistant (MDR/RR), slightly lower than the global averages of 3.5% and 18%, respectively.<sup>34</sup> MDR/RR notified cases have risen from 43 cases in 2010 to 152 cases in 2019, 380 cases less than those estimated by the WHO.<sup>35</sup>

### State of the Malaria epidemic

Haiti is one of two countries in the Caribbean with endemic malaria, and it shares a border with the other (the Dominican Republic)<sup>36</sup>, with an estimated 2.7 million Haitians at high risk for infection and 7.1 million at low risk<sup>37</sup>. Haiti has implemented the National Malaria Elimination Strategic Plan 2016-2022 (French Acronym PSNEM) with

<sup>29</sup> WHO 2018 TB Estimates

<sup>30</sup> WHO 2018 MDR-TB Fact Sheet . [https://www.who.int/tb/areas-of-work/drug-resistant-tb/MDR-RR\\_TB\\_factsheet\\_2018\\_Apr2019.pdf?ua=1](https://www.who.int/tb/areas-of-work/drug-resistant-tb/MDR-RR_TB_factsheet_2018_Apr2019.pdf?ua=1)

<sup>31</sup> Government of Haiti (2020). HTW 2018. Funding request for the Global Fund.

<sup>32</sup> Eisele TP, Keating J, Bennett A, Londono B, Johnson D, Lafontant C, et al. Prevalence of Plasmodium falciparum infection in rainy season, Artibonite Valley, Haiti, 2006. Emerg Infect Dis. 2007; 13:1494–6.

<sup>33</sup> WHO 2018 TB Estimates

<sup>34</sup> WHO 2018 Haiti TB Country Summary.

[https://extranet.who.int/sree/Reports?op=Replet&name=%2FWHO\\_HQ\\_Reports%2FG2%2FPROD%2FEFT%2FTBCountryProfile&ISO2=HT&LAN=EN&outtype=html](https://extranet.who.int/sree/Reports?op=Replet&name=%2FWHO_HQ_Reports%2FG2%2FPROD%2FEFT%2FTBCountryProfile&ISO2=HT&LAN=EN&outtype=html)

<sup>35</sup> Government of Haiti (2020). HTW 2018. Funding request for the Global Fund.

<sup>36</sup> CHAI. The feasibility of malaria elimination on the island of Hispaniola, with a focus on Haiti: an assessment conducted January–June 2013. Washington: The Clinton Health Access Initiative; 2013

<sup>37</sup> World Malaria Report (2019). Haiti Country Profile.

a goal of eliminating malaria by 2022, and the more aggressive Malaria Zero Alliance goal of eliminating malaria from Hispaniola by 2020.

Nearly all malaria infections in Haiti are caused by *Plasmodium falciparum*<sup>38</sup>, and while *Plasmodium vivax* and *Plasmodium malariae* infections also have been sporadically reported, they are likely imported.<sup>39</sup> *Anopheles albimanus* remains the only confirmed vector in the last decade, and no organochloride or organophosphate resistance has been reported as of 2016, or pyrethroid resistance as of 2013.<sup>40</sup>

In 2018 there were an estimated 16,000 cases (95% CI: 11,00, 22,000) of malaria infection in Haiti, of which 8,828 were confirmed at health facilities. In 2019 10,418 confirmed malaria cases were observed, with increases in the Departements of Grand’Anse (52%), Sud (18%), Centre (5%) and Nippes (4%) associated with the care disruptions experienced during the last quarter due to political unrest, when 55% of the cases occurred. Looking into historic trends, the decreasing trend is promising given that malaria cases have nearly halved in 2018 after the incidence rate hovered between 2 and 3 cases per 1,000 population per year from 2011 through 2017, reaching 0.8 cases per 1,000 population in 2019.<sup>41</sup> further illustrates these trends.

**Table 3. Malaria case trends in Haiti**

WHO region Country/area	Year	Population at risk	Cases			Deaths		
			Lower	Point	Upper	Lower	Point	Upper
<b>AMERICAS</b>								
Haiti	2010	8 888 919	44 000	77 638	125 000	5	198	450
	2011	9 023 827	50 000	81 483	127 000	5	208	460
	2012	9 158 378	36 000	59 798	92 000	4	153	340
	2013	9 292 168	30 000	49 387	77 000	3	126	280
	2014	9 424 693	22 000	32 932	45 000	2	84	170
	2015	9 555 609	22 000	32 829	44 000	2	84	170
	2016	9 684 651	24 000	36 765	50 000	2	94	190
	2017	9 811 866	23 000	34 878	47 000	2	89	180
	2018	9 937 674	11 000	16 000	22 000	1	40	81

Source: World Malaria Report (2019).

<sup>38</sup> Frederick J, Saint Jean Y, Lemoine JF, Dotson EM, Mace KE, Chang M, et al. Malaria vector research and control in Haiti: a systematic review. *Malar J.* 2016;15:376

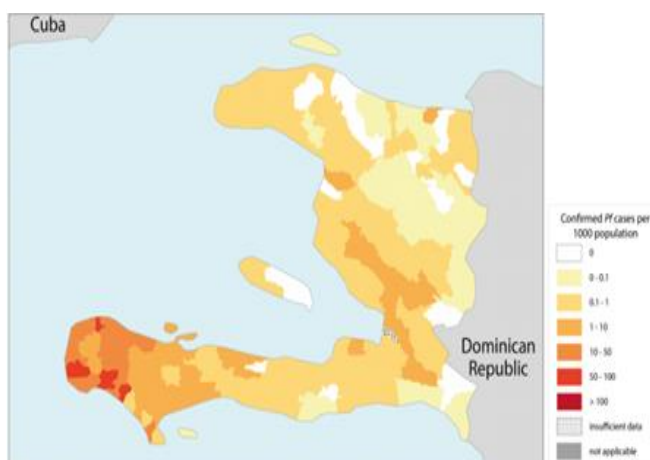
<sup>39</sup> World Malaria Report: Haiti Profile 2018

<sup>40</sup> Lucchi NW, Karell MA, Journel I, Rogier E, Goldman I, Ljolje D, et al. PET-PCR method for the molecular detection of malaria parasites in a national malaria surveillance study in Haiti, 2011. *Malar J.* 2014;13:462

<sup>41</sup> Government of Haiti (2020). HTW 2018. Funding request for the Global Fund.

Malaria incidence varies by time of year and region. The transmission period coincides with the two rainy seasons in Haiti (November-January and May-June).<sup>18</sup> Malaria transmission is concentrated geographically: 12.7% of Haitians live in areas of high transmission (defined by >1 case per 1,000 population and positivity index greater than or equal to 5%), and transmission hotspots can be very focal.<sup>42,43</sup> Over 50% of malaria in Haiti is concentrated in the Grande-Anse and Sud, followed by Nippes and Sud-Est, as illustrated in **Error! Reference source not found.** and **Error! Reference source not found.** below.<sup>39</sup> A few areas in the Nord-Ouest and Ouest have moved into the high transmission range as of June 2018.<sup>43</sup> Prevalence surveys in 2017 show that the prevalence in Grand Anse was 3.7% in the general population, 2.9% in children under 5 years of age, and 10% in pregnant women.<sup>43</sup>

**Figure 4. Distribution of Malaria prevalence in Haiti**



*Plasmodium falciparum* in Haiti remains chloroquine susceptible, and treatment guidelines recommend chloroquine plus low-dose primaquine to reduce transmission. Artemether-lumefantrine has been recommended as second line therapy since 2017. Severe malaria is treated with intravenous artesunate, with quinine as second line. Malaria diagnosis is based on microscopy or *P. falciparum*-specific rapid diagnostic tests (RDTs), but with RDTs predominating: 82% of suspected cases in the public sector and 75% in the private sector were tested by RDT in 2018.<sup>43</sup>

**Table 4. Number of cases, incidence rate and positivity index per departement 2019**

Departement	Cases	Incidence/1,000	Positivity Index
Artibonite	503	0.2	1.6%
Centre	542	0.6	2.3%
Grand'Anse	5,380	11.2	11.9%
Nippes	428	1.2	2.6%
Nord	17	0	0.1%
Nord Est	8	0	0.0%
Nord Ouest	80	0.1	0.5%
Ouest	1,083	0.2	2.5%
Sud	1,849	2.3	5.9%

Source: Government of Haiti (2020). HTW 2018. Funding request for the Global Fund.

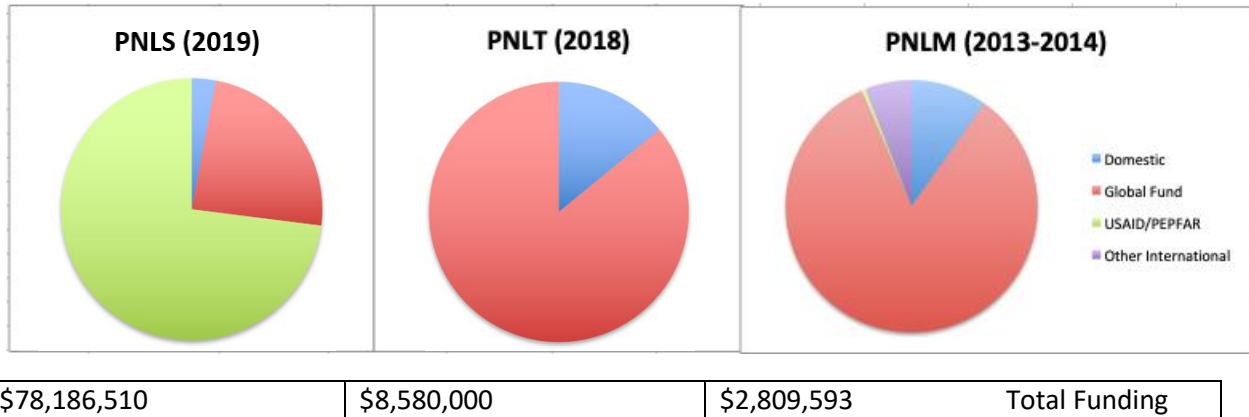
<sup>42</sup> "Manuel Normes de Prise...."

<sup>43</sup> "Rapport EMP du PSNEM...."

### 2.3 Financing of the Responses

The funding associated with the three national disease programs comes from a wide range of mainly external sources, with modest domestic financing (Figure 5). PNLS receives funds from Global Fund and PEPFAR; PNLM from the Global Fund, CDC and Malaria Zero; and PNLT from the Global Fund (CDC withdrew its support in September 2019). This has resulted in major challenges in coordinating activities within and across the diseases, and in collecting data and reporting on program performance. The three programs thus tend to be highly siloed and suffer from fragmentation and overlap.

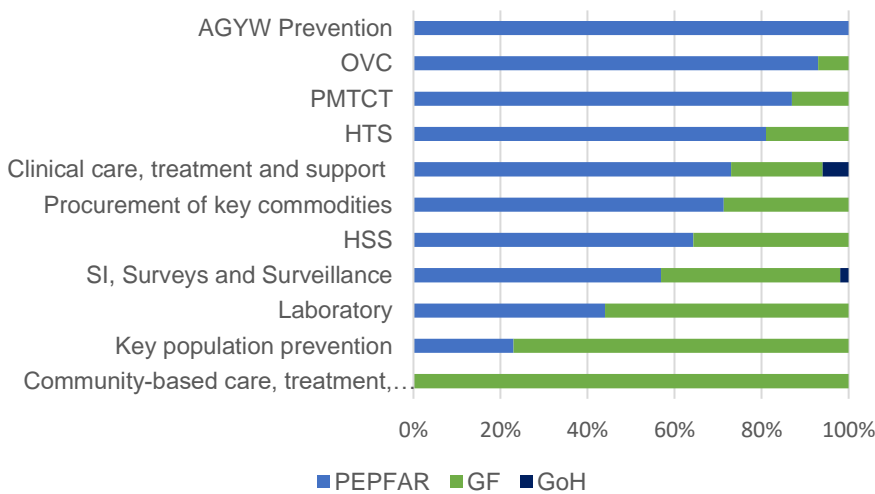
**Figure 5. Relative Composition of National Disease Program Funding by Source, Haiti**



Sources: HIV: Haiti COP 2019, TB : STOP TB ; Malaria : Haiti NSP 2018

According to the most recent data available for HIV, in 2019 PEPFAR and the Global Fund shared investments in key health system areas such as Laboratory (\$2.0 M), Strategic Information, Surveys and Surveillance (\$2.8 M), HSS (\$3.9 M) and Procurement of key health products (\$20.9 M). In this latter category, PEPFAR’s contribution is larger covering 73% of ARVs, 67% of RDTs, 82% of other drugs, 62% of lab reagents and 69% of viral load health products, except for condoms where the GF procures 100% of them.

**Figure 6. Annual Investment Profile by program area and donor, 2019**



Source: Authors elaboration with information from Haiti’s COP for 2019.

Compared to its neighbors, Haiti is highly dependent on external support: 96% of Haiti's HIV funding in 2015 came from external sources, compared to the Caribbean regional average of 31%.<sup>44</sup> In 2018, 87% of Haiti's TB funding came from external sources and likewise, in 2019, 97% of Haiti's malaria funding came from external sources. External health expenditure in Haiti, in current USD, has fallen sharply from the post-earthquake high of US \$48.8 per capita in 2011 to US \$14.5 in 2016, risking falling below the pre-earthquake levels of US\$13.7 per capita of 2009.<sup>45</sup> Integration of disease specific programs with each other and with the larger health system could have the dual benefits of increasing efficiencies.

## *2.4 Health System Supporting Activities*

### **Laboratory Capacity**

The Laboratory System in Haiti is led by the National Public Health Lab (LNSP) and is supported by a network of laboratories. The LNSP, strongly supported by the CDC, is responsible for organizing and leading the laboratory network, and overseeing the quality management. The LNSP manages the national network for sample transport, which supports testing for HIV (CD4, VL), TB (MDR testing) and cholera. The strengthening of the sample transport systems has been highlighted by different stakeholders as one of the best practices of donor-government collaboration in Haiti.

In the absence of a national policy for laboratories, the Strategic Plan 2019-2023 is the steering document. This Plan highlights as some of the main challenges: (1) an insufficiently developed legal framework; (2) absence of a regulatory policies, in particular for health products; (3) weaknesses in maintenance of equipment and infrastructure; (4) lack of supportive supervision of lab staff; (4) lack of a national quality plan; and (5) weaknesses in biosecurity, waste management and infection control system.

To support a further strengthening of the laboratory system, the Global Fund and the United Nations Office for Project Services (UNOPS), are planning to carry out an evaluation to identify the most urgent needs in terms of lab infrastructure and equipment.

### **Human Resources and Training**

By 2018, Haiti had 11,775 health professionals registered. Only 57% of those work in public institutions or mixed institutions. In terms of ratios, Haiti has 1 doctor per 3,353 inhabitants and 1 nurse per 2,231 inhabitants. These ratios are higher in the Ouest, Sud and Nord Departements.

According to the SPA 2017/2018 there are 396 staff trained to provide ART, 1,355 staff working on TB and 2,711 working on Malaria. As illustrated in the table below, HIV has a greater presence in the Ouest and Artibonite Departements, TB in the Ouest and Nord Departements, and Malaria in the Ouest, Nord and Artibonite Departements.

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<sup>44</sup> Roger Mc Lean, Karl Theodore, Althea La Foucade, Stanley Lalta, Christine Laptiste, Roxanne Brizan St. Martin, Daren Conrad & Don Bethelmie (2019): Austerity, and funding cuts: Implications for sustainability of the response to the Caribbean HIV/AIDS epidemic, Global Public Health, DOI: 10.1080/17441692.2019.1657926

<sup>45</sup> World Bank. <https://data.worldbank.org/indicator/SH.XPD.EHEX.PC.CD?locations=HT>

Retrieved: October 2019.



**Table 5. Number of facilities and staff in Haiti for ART, TB and malaria by departement, 2017-2018**

Department	Number of facilities offering ART	Number of staff working on ART	Number of facilities offering any TB test (lab or rdt)	Number of staff working on TB	Number of facilities offering any malaria test (lab or rdt)	Number of staff working on malaria
west	53	135	65	361	269	961
southeast	8	14	17	69	56	146
north	14	40	45	197	94	315
northeast	13	27	19	73	40	136
artibonite	21	50	25	141	96	319
central	11	34	19	91	49	158
south	11	25	37	152	70	226
grand-anse	9	24	15	84	48	146
northwest	15	35	22	112	66	206
nippes	7	12	16	75	31	98
Haiti	162	396	280	1355	819	2711

Source: SPA 2017/2018

Regarding the distribution of staff across the different types of facilities, HIV staff seem to be more present in Hospitals, TB is more evenly distributed but with a slightly stronger presence in health centers without bed, and Malaria health centers without bed followed by dispensaries (see table below).

**Table 6. Number of facilities and staff in Haiti for ART, TB and malaria by facility type, 2017-2018**

Facility type	Number of facilities offering ART	Number of staff members working on ART	Number of facilities offering any TB test (lab or rdt)	Number of staff members working on TB	Number of facilities offering any malaria test (lab or rdt)	Number of staff members working on malaria
Hospital	62	182	73	376	119	621
HC with bed	42	86	66	305	139	549
HC without bed	51	113	79	385	285	896
Dispensary/CHC	7	15	62	289	276	645
Haiti	162	396	280	1355	819	2711

Source: SPA 2017/2018

One of the main limitations of the HRH System is the lack of a study that provides clear information about the HR availability and the gaps/needs and a clear prioritized roadmap to redistribute and increase resources. The Human Resources Directorate (HRD), the public entity responsible of managing HR has made progress in updating the Human Management Information System (HRMIS). However, this information should be processed and analyzed to support to inform decision-making and improve coordination with partners investing in HR salaries and training.

### Supportive Supervision

Supervision to the departmental level and facilities is currently being done by different entities in Haiti. These include: the LNSP, DELR, DPM/MT, PNCT, PNLS, PNCM, the GF principal recipient (Ohmass), CDC, and some of the largest implementers such as PIH. Each supervision visit has a specific purpose, but some of the content might be repetitive. During Pharos visit we became aware of the existence of at least two integrated supervision forms: UGP and PIH. The UCMIT also highlighted they started working in their own integrated supervision form. We also observed that feedback to facilities is paper-based and is only captured in notebooks without any regular format.

While the Departements have a coaching team, there has not been an assessment of the effectiveness of this team and its formative supervision skills and outcomes.

The current GF funding requests asks for \$2.3 M for several supervision activities including visits, training and revision of supervision tools (see Annex D). Opportunities to strengthen supervision of lab staff, ASCPs and CDAs were highlighted in the new GF funding request.

**Information System**

During the last five years the MSPP has been focusing in achieving the interoperability of the different information systems under the Single National Health Information System (SISNU), DHIS2-based platform. The three main systems included in the SISNU are those for service statistics, epidemiological surveillance and resource statistics (i.e. health products, human, material and financial resources). The information in SISNU is aggregated in a single module for all diseases, this prevents Haiti of having specific prevention and community information reported specific for HIV, TB and Malaria.

In the last years DHIS2-case-based surveillance, also known as “trackers” were released for Malaria and TB. These systems report daily information using tablets or smartphones by OSE and ASCPs. Haiti is in the phase one of the TB tracker implementation, so far implemented in 27 sites and already covering more than 400,000 patients. The development of this platform has been supported by DAI and USAID. The Malaria Tracker pilot has been supported initially by the GF and recently by the Clinton Health Access Initiative (CHAI) and is currently used by more than 320 OSE and 400 health providers with support from the DELR. For this tracker, a dashboard was produced to inform decision-making.

**Procurement and Supply Chain**

More than five-years ago, the GoH envisioned the national system for supply and distribution of health products (SNADI), a system that would become an integrated, efficient, and transparent management system. Recently a Transition Plan (2018-2022) has been adopted. The Directorate of Pharmacies and Traditional Medicine (DPM/MT), is leading this effort, while receiving support from technical partners such as USAID, the GF, WB, PAHO, WHO, UNICEF, and UNFPA. The SNADI plan establishes eight factors for a successful implementation:

**Table 7. Factors for a successful implementation of the Transition Plan 2018-2022.**

1	Establishment of a national agency for supply and distribution of health products (CENADI)
2	Management/coordination of activities,
3	Integration of existing supply channels
4	Integration of commodity storage sites
5	Integration of peripheral commodity distribution channels
6	Continuity and sustainability of financing
7	Availability of a competent human resource pool
8	Establishment of an integrated information system.

Source: SNADI, Transition Plan 2018-2022.

The multiplicity of actors involved in the supply chain (more than 20) and the large dependency on external aid, are two of main complexities. While the larger organization and institutional set up (i.e. the creation of the national Central Purchasing and Distribution Agency for Health Products, CENADI) might require greater efforts of collaboration and preparation some of the other factors could be advanced in the short/medium term. For example the Logistics Management Information System (LMIS), where the efforts could be focused to move away

from the paper-based system, and start creating reports and using the information for decision-making – specifically at the departmental level where the storage capacity is more limited.

### 3. Key Integration Opportunities for the HIV, TB and Malaria Programs in Haiti

Pharos team identified 13 areas of recommended actions that would help the GoH and the UCMIT to implement a more integrated approach for the HIV, TB, and Malaria programs, raising efficiency and effectiveness. These recommendations are grouped in the four areas of the analytical framework: health systems integration, program leadership and governance, financing, and service delivery.

**Table 8. Summary of 13 key integration opportunities for HIV, TB and malaria**

Opportunity
Opportunity #1: Strengthen integrated knowledge and use of the lab sample transportation system
Opportunity #2: Integrate POC testing platforms for TB, HIV VL, Hep C, EID and STI
Opportunity #3: Increase interoperability of both aggregated and disaggregated health information systems for the three diseases
Opportunity #4. Promote joint training for health care providers and lab staff
Opportunity #5: Combine supportive supervision for the three diseases
Opportunity #6: Integrate the disease surveillance workforce
Opportunity #7: Merge pharmaceutical storage facilities and systems
Opportunity #8. TB and malaria microscopy integration
Opportunity #9: Strengthen multi-disease leadership and governance at central and departemental level
Opportunity #10: Promote expanded donor coordination within and across HIV, TB and Malaria
Opportunity #11: Use existing results-based financing tools to promote integration in PHC
Opportunity#12: Create/expand an integrated package of services for incarcerated populations
Opportunity#13: Reinforce and expand integrated TB-HIV services

These recommendations are described in detail below with an emphasis on:

- **Progress to date:** *What has been done so far to carry out this integration recommendation? What has been achieved? Setbacks and challenges? Current plans by key actors?*
- **Remaining gaps:** *What more needs to be done? What is the cost/impact of not having this integration in place?*
- **Existing experience/good practice elsewhere:** *Have other countries integrated in this area? Who? How did they do it? What was the impact? Any drawbacks?*
- **Recommendations:** *How would the integration activities look like in Haiti? Who would carry them out? Who needs to agree? What might the main obstacles or challenges be? What needs to be done to develop the activities further after our work is completed to prepare them for implementation?*
- **Suggested milestones for monitoring:** *How would Haiti measure progress in this area of integration? Processes? Impacts? How would one know if it was successful?*

#### 3.1 Health Systems Integration

##### Opportunity #1: Strengthen integrated knowledge and use of the lab sample transportation system

###### **Progress to date**

In an example of inter-donor and donor-government coordination, the National Public Health Laboratory (LNSP), The President's Emergency Plan For AIDS Relief (PEPFAR)/Centers for Disease Control (CDC), the World Bank (WB) and the Global Fund have created a robust transport system with an elaborated mapped road network which allows for the transport of HIV DBS (for viral loads) from peripheral labs (~170 sites) and TB samples from TB specific sites or HIV/TB integrated sites (either samples for culture or microscopy slides for QA/QC). All samples are sent to the central LNSP and GHESKIO site in Port-au-Prince (PAP) two times per week. This system also includes the surveillance for other infectious diseases –although details on how other surveillance occurs within this transport system was not obtained.

This effort is ongoing and took close to 5 years to develop. This effort is frequently cited as a local best practice of donor collaboration since funders for cholera (WB), HIV (PEPFAR) and TB (GF) came together to finance the lab system serving the entire health system. Key steps in coordination used for lab sample transport included: establishing a clear plan with terms of reference; signing an Memorandum of Understanding (MoU); setting up accountability mechanisms; harmonizing funding (managed through the Project Management Unit, UGP); and pilot testing joint activities which could then be expanded. Other programs could also benefit from this effort.

### ***Current gap***

While significant progress has been made in the past five years, further investment is needed to walk the last mile. The transport system is not prepared to handle political and environmental emergencies, creating concerns of unreliability, particularly in situations with roadblocks, weather disruptions, etc. As an example, through discussions with USAID, it appears this transport system is utilized infrequently and that PEPFAR has set up its own “parallel” system of transport which is felt to be more reliable and adept at handling challenges. In addition, LNSP noted concerns that drivers used in this system were not monitored sufficiently, reducing the confidence of key partners such as Partners in Health (PIH) and potentially leading to inefficiencies in the system. There are reports of partners having to wait for the transport to come to facilities for pick-ups and uncertainties about the schedule, which forced the partners to resort to another transporter that they had to select for timely delivery of samples. LNSP is aware of this situation and is planning to implement GPS tracking of vehicles.

While TB and HIV benefit from the system, malaria has not yet been integrated. Malaria microscopy occurs in some peripheral sites, though training is lacking, and level 2 labs at the district level and at LNSP have QA/QC capabilities. Previously, it appears that malaria microscopy slide transport to higher level facilities was facilitated by leveraging the TB sample transport. Since the creation of the TB/HIV transport system, it appears that there is no dedicated transport available for malaria samples. While widespread testing of malaria DBS (or RDTs) for drug resistance serology is not yet occurring, this system may also serve as a transport network for such samples in the future when monitoring is implemented.

All this leads to the inconsistent utilization of the transport system by implementing agencies. For example, the PIH-ZL site in St. Marc estimates it sends 60% of its DBS samples to the LNSP via its own transport system. This leads to higher overall costs due to parallel systems.

### ***International experience and best practices***

The STOP TB manual for TB sample transport discusses the benefits of leveraging HIV and other transport systems (i.e. malaria, hepatitis C (HCV), Ebola).<sup>46</sup> However, the same report points out that this must be done in situations where it is feasible and efficient, not solely for the sake of integration. A suggestion is to map the flow of different specimen types between facilities and laboratories to find overlaps that could be eliminated through further integration. In Haiti, this exercise could be done for malaria samples. Mappings of laboratory sample flows could also be helpful in identifying health facilities to serve as coordination centers, or ‘hubs’, for specimen consolidation that would cover all health facilities in a catchment area (30km to 40km) for transport to the LNSP, similar to what has been implemented by Uganda’s Ministry of Health.<sup>47</sup> This facilitates the routes that would need to be covered by couriers between the LNSP and satellite health facilities, and all clinics in each catchment area could focus on just getting their samples to the coordination center.

The STOP TB manual also recommends the use of the Laboratory Efficiency and Quality Improvement Planning tool (LabEQIP), an open-source GIS-based referral network optimization software tool, to increase efficiency of lab networks and improve service delivery quality. This tool is managed by the USAID Global Health Supply Chain Program-Procurement and Supply Management (GHSC-PSM). Lesotho provides a good example of sample transport tracking using mobile phones and barcode scanners, and the development of a mobile application and dashboard that shows the sample pick up, sample delivery, results pick-up and results delivery.<sup>48</sup>

Regarding contingency planning and mitigation strategies in case of emergencies, Madagascar and Papua New Guinea offer good examples of using drones to transport TB specimens and medicines for direct observation of therapy (DOTS) to remote populations. These drones usually travel 30 kms, but implementers could create recharging hubs to allow drones to travel longer distances.<sup>49</sup>

### ***Recommendations***

- 1. Strengthening the LNSP sample transport system with additional financial support.** Strengthening will not only benefit HIV, TB, and malaria, but also provide a long-term capacity building system that can be leveraged for other emerging diseases, outbreaks. For instance, this system could be used for COVID-19 monitoring and sample transport to LNSP.
- 2. Incorporation/addition of “emergency” strategies for transport in the face of instability** Discussion between LNSP, WB and CDC would be essential. Several options currently being discussed include drones, boats and helicopters.
- 3. Addition of GIS tracking to enhance driver accountability**
- 4. Integration of malaria microscopy QA/QC samples into the system** (and, in the future, malaria serology and drug resistance sample testing).
- 5. Gradually increasing usage by PIH, USAID and other key NGOs.** Their facilities could potentially be used as sentinel sites to track the system’s performance.

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<sup>46</sup>Global Laboratory Initiative. (2017). GLI guide to TB specimen referral systems and integrated networks. World Health Organization, Geneva, Switzerland. Retrieved from:

[http://www.stoptb.org/wg/gli/assets/documents/GLI\\_Guide\\_specimens\\_web\\_ready.pdf](http://www.stoptb.org/wg/gli/assets/documents/GLI_Guide_specimens_web_ready.pdf)

<sup>47</sup> Ibid.

<sup>48</sup> Ibid.

<sup>49</sup> Ibid.

### ***Possible milestones for monitoring***

- The LNSP to reform the lab sample transport policy to include a contingency plan by 2023.
- The LNSP with the support from CDC, United States Agency for International Development (USAID) and other donors to pilot and assess the cost-effectiveness of the different emergency strategies by December 2021– choosing the best for each departement.
- GIS to be added to 100% by 2021.
- National Malaria Control Program (PNCM) and LNSP to present this suggestion to the malaria forum and develop a roadmap to incorporate malaria to the system, by 2021

### **Opportunity #2: Integrate POC testing platforms for TB, HIV VL, Hep C, EID and STI**

#### ***Progress to date***

GeneXpert is largely a GF and CDC--funded initiative. Haiti has 41 GeneXpert machines in 24 sites distributed across the country, designed in a hub and spoke system. 16 out of the 41 machines are located with GHESKIO. However, in August 2019, 21 machines were broken – reducing the real availability to only 20 machines and 68% of the modules (121/176).<sup>50</sup> This transport system also handle TB samples from peripheral Treatment Centers (CT) and Diagnosis and Treatment Centers (CDT) sites. According to a recent spot check is unknown how many of the 273 sites are part of the system.<sup>51</sup>

In March 2020, the LNSP reported the plan for 2020 was to evaluate the affordability and cost-effectiveness of having GeneXpert as Haiti’s point of care (POC) platform for TB’s polymerase chain reaction (PCR) testing and all viral load testing for the full range of viral diseases in the country.

#### ***Current Gap***

Currently GeneXpert machines in Haiti are only being used for TB testing (at about 32% capacity)<sup>52</sup>, even though these platforms have the potential to be deployed for HIV Viral Loads (VL), Early Infant HIV Diagnosis (EID), Sexually Transmitted Infections (STIs) and Hepatitis testing, as well as other infectious diseases such as MRSA, Norovirus, Group A Streptococcus, and even SARS-CoV-2. Localization of GeneXpert platforms appears to have been based on high-volume HIV/TB centers, though a systematic review of this decision process was not available for our views, and skepticism exists by some implementers that these sites truly represent optimal spatial locations. It is also unclear if the locations correlate with only high-volume HIV/TB co-infection areas, high-volume TB sites, or a mixture. Expanded use of GeneXpert appears to be challenging, with a recent GF-supported spot-check highlighting persistent limitations in the quality of supportive supervision, supply-chain management, unavailability of standard protocols/tools, and limited use of GeneXpert results for decision-making.<sup>53</sup> Decentralization of expanded testing will reduce overall costs and improve timeliness of reporting.

#### ***International experience and best practices***

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<sup>50</sup> Haiti GF LFA (2020). GeneXpert Deployment Spot Check for the grant HTI-C-PSI.

<sup>51</sup> Ibid.

<sup>52</sup> Ibid.

<sup>53</sup> Ibid.

In the literature on the use of GeneXpert multi-disease testing and optimizing POC testing placement in low- and middle-income countries there are numerous positive examples including:

- **Multi-disease (HIV VL, EID and MTB/RIF) testing in rural Zimbabwe.** Results were positive with minimal training and biosafety considerations. Zimbabwe prioritized HIV-VL for patients with advanced HIV, pregnant women, adolescents and patients with suspected Antiretroviral therapy (ART) failure. The POC VL allowed adherence counseling to occur within 8 days and the majority of patients to re-suppress their VL.<sup>54</sup>
- **Placement of POC testing presents the lowest costs for the hardest-to-reach facilities in Zambia.** This study uses a geospatial cost model to assess the optimal POC placement. The main findings were that POC for VL testing may reduce the cost for testing the hardest-to-reach populations despite the cost of equipment and low patient volumes.<sup>55</sup>
- **A Systematic Review pointing on some of the challenges of POC testing.** According to this study POC studies were easy to use, had rapid turnaround times and comparable accuracy to the reference laboratories. However, some limitations include reported error rates which can be resolved with retesting, and the weak use of test results for clinical management.<sup>56</sup>
- **A study of TB, HIV and viral hepatitis diagnostics in eastern Europe and Central Asia** points out that multi-disease platforms exist but adequate staff training and understanding of the different laboratory and infection control risks is required for optimal implementation. Georgia provides a good example of diagnostic service integration where the hepatitis C elimination 2020 plan catalyzed the integration of HIV-TB testing and hepatitis C screening. While different commercial multi-disease platforms can test for HIV, Hep C, TB and MDR-TB (i.e. m2000 RealTime System and GeneXpert System), the GeneXpert is described as a point-of-care or near-point-of-care device, and thus the most useful for decentralizing testing services.<sup>57</sup>

### **Recommendations**

GeneXpert has the capacity for multi-disease testing, including HIV VL, Hep C, and EID, as well as TB, without the need for major restructuring of facilities. While current capacity in Haiti will not allow for full decentralization of HIV VL testing or expanded disease surveillance, a hybrid (local/central) system should be put in place. To leverage the lab infrastructure to increase POC testing, Haiti should:

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<sup>54</sup> Ndlovu, Z., Fajardo, E., Mbofana, E., Maparo, T., Garone, D., Metcalf, C., ... & Zinyowera, S. (2018). Multidisease testing for HIV and TB using the GeneXpert platform: A feasibility study in rural Zimbabwe. *PloS one*, 13(3). Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/29499042>

<sup>55</sup> Girdwood, S. J., Nichols, B. E., Moyo, C., Crompton, T., Chimhamhiwa, D., & Rosen, S. (2019). Optimizing viral load testing access for the last mile: Geospatial cost model for point of care instrument placement. *PloS one*, 14(8). Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/31449559>

<sup>56</sup> Agutu, C. A., Ngetsu, C. J., Price, M. A., de Wit, T. F. R., Omosa-Manyonyi, G., Sanders, E. J., & Graham, S. M. (2019). Systematic review of the performance and clinical utility of point of care HIV-1 RNA testing for diagnosis and care. *PloS one*, 14(6). Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/31246963>

<sup>57</sup> Dara, M., Ehsani, S., Mozalevskis, A., Vovc, E., Simões, D., Calvo, A. A., ... & Kalmambetova, G. (2019). Tuberculosis, HIV, and viral hepatitis diagnostics in eastern Europe and central Asia: high time for integrated and people-centered services. *The Lancet Infectious Diseases*. Retrieved from <https://www.sciencedirect.com/science/article/pii/S1473309919305249?via%3Dihub>

1. **Map the distribution of HIV and TB burden and determine the optimal placement and use of GeneXpert machines** and improve the supply chain for GeneXpert cartridges and stock cards. LNSP has expressed interest in allowing for more POC testing for HIV VL, which GeneXpert would allow. Planning for optimal locations of GeneXpert should incorporate.
2. **Map the current GeneXpert sample transport sub-system**, including health facilities with identification of suspected TB cases that are part of the transport system and those that are excluded. Notably, it appears that HIV CD4 counts are also available in a hub and spoke framework, but these sites do not necessarily overlap with locations of GeneXpert machines. Mapping should include these locations to maximize efficiency.
3. **Strengthen lab supporting supervision to increase the use of existing GeneXpert machines.** Implementation by a third party would be preferable, particularly as these become multi-disease platforms.
4. **Formalize the GeneXpert cartridge waste management plan** (perhaps utilizing the sample transport system). Discussion between LNSP, PEPFAR/PIH, and GHESKIO sites must occur to make this happen.

Among the challenges, the LNSP questioned the efficiency of using GeneXpert machines as the POC testing platform, since some tests take more time than others and a careful operational planning is needed to make sure that the equipment is optimally used.

#### ***Possible milestones for monitoring***

- GIS prevalence and placement exercise completed by 2021
- A roadmap for implementing an integrated POC system by 2021
- Piloting integrated POC system in 10 facilities by 2022
- GeneXpert cartridge waste management system in place by 2021

#### **Opportunity #3: Increase interoperability of both aggregated and disaggregated health information systems for the three diseases**

##### ***Progress to date***

The main health information system in Haiti is *the System d'Information Sanitaire Nationale Unique* (SISNU). This information system has been in place for many years and has transitioned over time from a paper-based system to an open-access digital database that aims to house all health information for Haiti through an online platform supported by the DHIS2 Platform. The online platform has been available since 2015 and now provides monthly data for more than 1,000 facilities. While the source of HIV, TB and malaria service delivery data vary, all aggregated data are integrated at the level of the SISNU.

**HIV data:** Most HIV patients in Haiti are identified, tested, and treated at MSPPs facilities supported by either Global Fund or PEPFAR MSPP facilities, and most of those supported by Global Fund and/or PEPFAR use an Electronic Medical Record (EMR) called iSante to monitor daily patient activity including, testing and treatment information. Only PIH and GHESKIO, implementing partners of the GF and PEPFAR, have their own EMRs. A Case Based Notification System (CBNS), often referred to as the HIV Tracker or Suivi Actif Longitudinal du VIH en Haïti (SALVH), has been developed to identify new cases. All EMRs (iSante, GHESKIO and PIH's) interoperate on the MESI platform with SALVH and the biometric coding system that allows the use of the PLR app to monitor patient linkage, retention and care individually. There are limitations to this interoperability at diagnosis points due to the



limited availability of biometric equipment at a national scale and technical/electrical issues where they are available.

Most sites, especially treatment sites and some VCTs, also have the ability to use biometric coding to increase patient confidentiality and prevent duplication of patient records. All facilities must report aggregated HIV data monthly to the MESI (National Monitoring and Evaluation Platform). MESI has an aggregated monthly form, but the information from the EMR needs to be loaded manually into this form. Since data is manually transferred from MESI to SISNU, only a subset of MESI data feeds into SISNU sporadically. To address this situation, GF-funded technical assistance is working on automatizing the inter-operationalization between the two systems by the end of 2020.

One of the largest limitations of the current system is the lack of a platform that collects and reports prevention and community delivered services. At the moment this information is paper-based and aggregated in Excel reports. This shortcoming prevents the program from extracting information from MESI and SISNU. This year, a component in MESI is being developed to standardize and digitalize the reporting of prevention services and identification of services provided to KPs. As the ASCPs get strengthened and roll-out, there will be a need for community-based information for monitoring and supervising the community-level outcomes and activities.

**TB data:** TB surveillance has not had a case-based follow-up/notification system until just recently with the development of the DHIS-2-based TB tracker by DAI with CDC/USAID and GF support. There are 268 TB sites. Of these, 27 sites use electronic tablets to input TB case identification and TB care and follow-up information for each patient (TB Tracker data). The implementation of the TB tracker is currently only a pilot in one Departement, and scale up is planned progressively for 2020-2021. In these same sites, a monthly aggregated report of symptomatic respiratory patients and examinations is submitted through SISNU (partial information of all required TB program strategic information). Quarterly reports are manually compiled with TB case notification, including TB/HIV, and treatment outcomes are manually supported by Departement and Central level to ensure quality and simultaneous verification of primary patient data. The 241 sites that do not use the TB Tracker tablet, collect data on TB case identification and other TB care and follow-up using paper records that are aggregated monthly, reported to the Departemental level for verification, and then entered into the SISNU.

**Malaria data:** Malaria case identification and treatment information are collected at the site level. These data are collected through paper-based data systems, using existing forms or books in medical consultations, emergencies, and laboratories in all health facilities. In 2018-2019, the Malaria Tracker was developed by Clinton Health Access Initiative (CHAI) and in coordination with the Direction of Epidemiology, Laboratories and Research (DELR). As part of this tracking system, a standardized malaria case notification form and malaria case investigation form were developed and scaled up using paper-based methods, creating a source of the data that can be digitalized on the malaria tracker. More than 800 sites have the standard case notification form which is used to provide the data which is digitalized on DELR CBS/tracker. There are issues in linking Tracker information with the SISNU, since the Tracker is built using an older software incompatible with the one currently used for DHIS2.

Overall, the statistical data can be classified in three pillars and in principle are owned by three different actors in the MSPP: (1) service delivery data (Units of Studies and Programming; UEP); (2) epidemiological data (DELR); and (3) material and human resources (Directorate of Human Resources; DRH).

### ***Current gap***

While there have been many investments in HIV data systems and EMRs (PIH, GHESKIO, i-Sante) there is still a lack of interoperability across the HIV data systems. While there are many potential interoperability opportunities, one initial step is the ability to create interoperability between the aggregated MESI data, the SALVH, and the SISNU (DHIS2-based national health information system). DAI has developed a programming language to make these databases interoperable and the CDC has also agreed to collaborate with the GF- Population Services International (PSI) and the UEP to implement the interoperability. Global Fund could continue to support this initiative.

Moreover, the sustainability of the multiple case-base notification systems (Malaria-tracker, TB-tracker, other trackers) is uncertain due to financial constraints (i.e. resources to buy and maintain equipment and to train staff) and data quality management issues. For example, the TB Tracker is an extremely user-friendly and useful tool, however it is uncertain how its use will be rolled-out from the current 27 sites to the remaining sites with QA/QC. As noted elsewhere, TB surveillance also appears to be stronger in HIV/TB co-infection settings than in TB only centers due to an aging TB workforce and lack of funding for TB.

Another challenge for the extended use of Trackers is how to secure internet reliability, and address maintenance and battery issues. Efficiency could be increased by integrating these and other future trackers into a single platform that can be accessed for all the diseases and managed by the UEP.

The SISNU is the only place where HIV, TB and malaria data are integrated. However, the data are not in real-time, with a lag of 3 months to upload the aggregate data to SISNU depending on the site and the data source. There are many potential opportunities to integrate individual level HIV, TB and malaria information. Integrated data would allow for broader macro, system level analyses in current trends in service provision for HIV, TB and malaria. Data integration would also allow for the ability to conduct more rigorous efficiency analyses with regard to provision of HIV, TB and malaria services at primary health care facilities. The cost of continuing to use different databases is a lack of understanding of the true population need for HIV, TB and malaria services

It is unclear how reliable reporting from the private sector for each of the three diseases is. This is likely more of an issue for malaria (which may account for up to 30% of testing) than for HIV (~1000 PLWHIV) or TB, given the latter likely present to the MoH or large NGOs for care where services are better subsidized/coordinated. However, to ensure malaria elimination is successful, the private sector must be mandated to test/report all malaria cases. Enhanced public-private partnerships must be forged to ensure that private healthcare sites also report their activities to the SISNU.

### ***International experience and best practices***

- **Challenges and opportunities of using DHIS2 in the Eastern Mediterranean Region.** This study suggests that in addition to HIS strengthening efforts, countries should leverage innovative Information and Communication Technology (ICTs) such as internet, cloud and mobile computing. This could be useful to manage individual level data and, share and visualize data.<sup>58</sup>

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<sup>58</sup> Sahay, S., Rashidian, A., & Doctor, H. V. (2019). Challenges and opportunities of using DHIS2 to strengthen health information systems in the Eastern Mediterranean Region: A regional approach. *The Electronic Journal of Information Systems in Developing Countries*, e12108. Retrieved from <https://onlinelibrary.wiley.com/doi/pdf/10.1002/isd2.12108>

- **Challenges in developing and implementing and integrated Health Management Information Systems (HMIS) in Pakistan.** Challenges include fragmentation, lack of protocol or guidelines, data quality and incompleteness, and duplication. At the organizational level the limitations are the lack of a national regulatory authority, the lack of an e-health informatics competence hub, capacity building and prolonged power and internet outages.<sup>59</sup>
- **The cost-effectiveness of using mHealth/mobile devices to provide antenatal care services in Nigeria.** This study found that mHealth program was inexpensive and cost-effective. Nevertheless, this study also showed that health care workers had difficulty creating interoperability between the information captured by this mobile device and the DHIS in Nigeria for antenatal care.<sup>60</sup>

### **Recommendations**

In order to keep strengthening integration of the health information system we propose the following actions:

1. **Finalize the technical assistance to create interoperability between the aggregated databases:** EMRs, MESI, SALVH, and SISNU. A USAID implementing partner has developed a programming language to make these databases interoperable and the CDC has agreed to collaborate with PSI and the UEP to implement it. This would include an automated migration from MESI to DHIS2 SISNU, considering that EMRs and SALVH already interoperate on MESI. This project is already being implemented by partners and should be supported
2. **Integrate the multiple “tracker” case-base notification systems** Ideally a single “tracker” platform that can be accessed for all diseases should be in place. The UEP should verify that all future DHIS-2 trackers will be fully interoperable with SISNU, and work to integrate existing trackers into SISNU as well Increase the movement from paper records to tablets for data inputting.
3. **Identify and assist facilities and data collectors with the common problems** noted with the trackers and data systems: lack of internet, outdated tablets, and training for data entry.
4. **Work with private labs and private sector providers to incorporate HIV, TB, Malaria data in national systems, including case-based surveillance and patient follow-up information.**

### **Possible metrics for monitoring**

- Interoperable HIV data system by 2022
- Integrated Tracker platform managed by the UEP by 2023
- Integrated, individual/patient level HIV, TB and malaria data collected via EMR by 2023

### **Opportunity #4. Promote joint training for health care providers and lab staff**

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<sup>59</sup> Asghar, Z. (2019). Towards an Integrated Health Management Information System in Pakistan (Master's thesis). Retrieved from [https://www.duo.uio.no/bitstream/handle/10852/69071/1/Zubair\\_Asgar\\_MasterThesis\\_2019.pdf](https://www.duo.uio.no/bitstream/handle/10852/69071/1/Zubair_Asgar_MasterThesis_2019.pdf)

<sup>60</sup> Bowser, D.M., Shepard, D.S., Nandakumar, A., Okunogbe, A.\*, Morrill\*, T., Halasa-Rappell, Y., Jordan, M., Mushi, F.\*, Boyce, C., and Erhunmwunse, O. A. 2018. Cost Effectiveness of Mobile Health for Antenatal Care and Facility Births in Nigeria. *Annals of Global Health*. 84(4), pp.592–602.doi: 10.29024/aogh.2364. Retrieved from <https://www.annalsofglobalhealth.org/articles/10.29024/aogh.2364/>

### ***Progress to date***

The human resources situation in Haiti is complex with a large deficit of the three main health care workers categories (doctors, nurses and midwives) – 0.64/1,000 inhabitants compared to the 2.5/1,000 recommended by the WHO. In terms of training, at the national level the MoH has prioritized the Human Resource Management Information System (SIGRH) strengthening and the Quality Assurance for Training in Haiti (ASQF-H).<sup>61</sup>

In-service training for HIV, TB and malaria is siloed in each disease area. In addition, facilities do not have a clear understanding of who has been trained or in what areas. Different government units (Programs, Directorates, UGP, LNSP, etc.) and donors (CDC, CHAI, USAID) offer trainings to different health cadres (field agents, nurses, physicians) on different topics. One facility thought there were up to twelve different training per year.

While no integrated training seems to be offered in Haiti combining HIV, TB and malaria training concurrently, HIV clinics are treating HIV patients that also have TB. In one facility we visited, they are treating 2,400 HIV patients, of which 30 also have active TB. In a second facility, of the 2,428 HIV patients, 25 are co-infected with TB.

There are also a number of trainings that occur for data collectors that work to input data for the various Trackers (HIV, TB and Malaria Tracker). There are various cadres of data collectors that have been trained specifically for entering data and tracking surveillance for each disease - Epidemiological Surveillance Officers (OSE) for malaria, Polyvalent Community Health Workers (ASCP) for other diseases. There are a core set of skills that can be identified to create an integrated training for data collectors and surveillance officers.

In the past, CHARESS has collaborated with the PNLS, PNLT, and PNCM to help them develop their curriculum/guideline for providing care to patients affected by the three diseases and to train healthcare providers in their use. Currently the work is more focused on supporting the PNLS to review guidelines and updating the EMR for people living with HIV (PLWHIV) and HIV monitoring indicators.

### ***Current gap***

Integrated training for HIV and TB is needed. One clinician noted that all HIV trained clinicians should also be trained in TB and vice versa. Malaria training could also be integrated with primary care trainings and/or maternal and child health. TB faces an additional challenge, since nurses trained in TB are getting close to retirement, and to our knowledge, no comprehensive plans/resources exist to replace them.

The major cost/impact of not having integrated training in place is that separate training programs are costly and inefficient, and health workers who need to address several diseases may not be fully equipped to do their jobs.

### ***International experience and best practices***

As stated in the WHO Policy on Collaborative TB/HIV Activities, HIV and TB programs should formulate a joint training plan to provide pre-service and in-service formation on collaborative TB/HIV activities to healthcare workers. This training should also be delivered to primary health-care workers.<sup>62</sup> As observed in the Republic of

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<sup>61</sup> MSPP (2017.) *Haïti Plan Stratégique de Développement des Ressources Humaines pour la Santé 2030 (MSPP)*. Retrieved from <https://www.hfgproject.org/haïti-plan-strategique-de-developpement-des-ressources-humaines-pour-la-sante-2030/>

<sup>62</sup> World Health Organization (2012). *WHO Policy on Collaborative TB/HIV Activities: Guidelines for National Programmes and Other Stakeholders*. Geneva: Recommended collaborative TB/HIV activities. Retrieved from <https://www.ncbi.nlm.nih.gov/books/NBK131896/>

Congo and other resource-poor settings, joint training activities are challenging but can provide benefits such as sharing more information, increased communication and collaboration and an improved referral system.<sup>63</sup>

One best practice is the implementation of a pharmacovigilance (PV) training model for HIV, TB and Malaria in Nigeria. The study implemented a Structured Pharmacovigilance and Training Initiative (SPHAR-TI) model recommended by the World Health Organization (WHO) over a period of 12 months. The participants, who had not previously been trained in pharmacovigilance, submitted 3000 Individual Case Safety Reports (with 100% completeness), a 273% increase, and 46 Pharmacovigilance Committees were activated by the participants. Implementing this and similar topics across programs (i.e. with EPI) might be a quick win in Haiti.<sup>64</sup>

### **Recommendations**

- 1. Conduct a study to analyze the number of HIV, TB and malaria trainings, who has been trained, the cost, funding source, and content of trainings to determine efficiencies to be gained through integration opportunities as part of a comprehensive plan.**
- 2. Conduct a study to assess the training needs for data collectors and surveillance officers (OSE for malaria, ASCP for other diseases).** A common training module can be created so that anyone trained can input the appropriate data for HIV, TB or malaria.
- 3. Conduct a study to understand the number and demographics of TB health professionals** and their recruitment and training needs.
- 4. Re-start the training of HIV personnel in TB treatment (previously carried out by CHARESS).** A third party should be in charge of executing all training needs for the three diseases using the comprehensive and integrated plan.
- 5. Train and maintain a pool of certified trained technicians for microscopy for malaria and TB and place them at Level 2 labs** so that Quality assurance and quality control (QA/QC) can be performed more efficiently as malaria cases decrease (See Opportunity #13).

### **Possible milestones for monitoring**

- Integrated training modules for certain cadres (HIV/TB) and in data collection and surveillance by 2022
- Number of integrated trainings in different areas (HIV, TB and malaria) by 2023
- Number of health care workers trained using integrated modules by 2023

### **Opportunity #5: Combine supportive supervision for the three diseases**

#### **Progress to date**

Supportive supervision remains fragmented at the facility and departement levels as separate visits from the HIV, TB and malaria programs are made to the same facility. Supervisory visits for HIV and TB are conducted by different

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<sup>63</sup> Linguissi, L. S. G., Gwom, L. C., Nkenfou, C. N., Bates, M., Petersen, E., Zumla, A., & Ntoumi, F. (2017). Health systems in the Republic of Congo: challenges and opportunities for implementing tuberculosis and HIV collaborative service, research, and training activities. *International Journal of Infectious Diseases*, 56, 62-67. Retrieved from <https://www.sciencedirect.com/science/article/pii/S1201971216311961>

<sup>64</sup> Avong, Y. K., Jatau, B., Gurumnaan, R., Danat, N., Okuma, J., Usman, I., ... & El-Tayeb, O. (2018). Addressing the under-reporting of adverse drug reactions in public health programs controlling HIV/AIDS, Tuberculosis and Malaria: A prospective cohort study. *PloS one*, 13(8). Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6104922/>

partners (CDC, USAID, PSI) and government entities (PNLS, PNLT and departmental program authorities). The respective roles of central and departmental offices in supervision are not clear.

At the departmental level, each program (PNLS, PNLT, and PNLN) has three nurse coordinators, one for HIV, TB and malaria and one for M&E (Data registration office, DRO). With 10 departements, this means there are 30 departement-level nurse coordinators that could be leveraged for supervision. Supervision feedback to facilities is only recorded in notebooks and is not converted to electronic form, making it difficult to monitor actions and progress in implementing recommendations. While each disease supervisor has their own tool, there are good of integrated supervision tools (i.e. that of PIH and UGP) which are not used during by the departement or the central supervisors.

Gains from integrating supportive supervision across disease programs could be substantial, including significantly decreased fuel and human resources (HR) costs, as well as increased quality of information delivered, especially regarding co-morbidities and better problem-solving at the facility level.

### ***Current gap***

Efficiencies can be gained through integrated supervisory visits that would include several programs at the same time, with a clear logistical organization. At the two sites that we visited in Haiti, staff reported that PNLN, PNLS, Departement level, CDC, and other donors all visit their site for supervisory visits at different times and on different schedules, with some redundancy. Some come every month, some come quarterly, and some do not show up much at all.

According to the SPA, supervision (during the last 6 months) was relatively high (76-86% of facilities) while staff training had much lower coverage (26-33%), suggesting that supportive supervision does not lead to skills development.

There are several important aspects of integrated supervisory visits that need to be better analyzed through a study covering:

- a) Who currently conducts and who should conduct the supervisory visits;
- b) Where they will be carried out;
- c) Content area (clinical and health system focused); and
- d) Mechanisms for follow up on noted issues.

The major cost/impact of not having integrated supervision in place is the lost time that providers spend on supervisory visits from many entities without appropriate follow up. Note that it will be desirable to keep a few specialized supervisions separated. For instance, supervisions to monitor GeneXpert use and vector control initiatives.

### ***International experience and best practices***

Tanzania offers a good experience in implementing and assessing supportive supervision. A three-step process was designed to implement, analyze and use the results of supervision for decision-making (See figure below).<sup>65</sup>

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<sup>65</sup> Renggli, S., Mayumana, I., Mboya, D., Charles, C., Mshana, C., Kessy, F., ... & Pfeiffer, C. (2019). Towards improved health service quality in Tanzania: contribution of a supportive supervision approach to increased quality of primary healthcare. BMC health services research, 19(1), 848. Retrieved from <https://link.springer.com/article/10.1186/s12913-019-4648-2>

The new supervision systems was assessed using six quality indicators: (1) Physical environment and equipment; (2) Job expectations; (3) Professional knowledge, skills and ethics; (4) Management and administration; (5) Staff motivation and (6) Client satisfaction. HIV/AIDS and TB were included as part of the Professional knowledge, skills and ethics dimension. This study found that HIV/TB clinical performance improved significantly.

**Figure 7. Illustration of the 3-step process for implementing and assessing supportive supervision in Tanzania**



Source: USAID (2008).

The Guidelines for Supportive Supervision in the Health Sector including the Integrated Supportive Supervision Checklists (ISCLs) published by USAID could also be used as a reference.<sup>66</sup>

### Recommendations

- 1. Create an integrated supervision plan led by UCMIT with approval from the Director General.** The plan would cover who will conduct the supervisory visits, where they will be carried out, content area (clinical and health system focused), and mechanisms for follow-up on noted issues. The UCMIT could help to further developed the matrix below.

**Table 9. Example of supporting supervision for HIV, TB and malaria planning**

	Where	Frequency	To do what	Mechanisms to document and follow up on findings
PNLS, PNLT, PNCM (integrated supervisions)	Departments	6 months	X, Y, Z	X, Y, Z
PNLS, PNLT, PNCM (integrated supervisions)	CDAIs	6 months (at the same time as dept.)	X, Y, Z	X, Y, Z
PNLS, PNLT, PNCM (integrated supervisions)	Spot-check of sites	6 months (at the same time as dept.)	X, Y, Z	X, Y, Z
Departments	Sites			
Departments	Equipe communautaire			

Source: authors

<sup>66</sup> USAID (2008). Guidelines for Supportive Supervision in the Health Sector including the Integrated Supportive Supervision Checklists (ISCLs). Retrieved from <http://initiativesinc.com/download/supportive-supervision-health-sector/>

2. **The UCMIT to become the coordinating body for field supervision and to create supervision tools** (i.e. manuals, standard operating procedures (SOPs), and reporting formats).
3. **Development of supervision capacity at the subnational level.** The departements and the Health District Units (UAS), should also be involved in supervision with at least one HIV/TB and one vector control supervisor per departement.

#### ***Possible milestones and metrics for monitoring***

- Updated/new manuals/SOPs for integrative supervision by 2021
- Integrated supervisory visits per quarter at each facility
- Percent of suggested improvements from supervisory visits that are follow up on in 2022 and 2023

#### **Opportunity #6: Integrate the disease surveillance workforce**

##### ***Progress to date***

Surveillance is the backbone of control and elimination of HIV, TB, malaria, and other emerging diseases. The main entity charged with surveillance in Haiti is the DELR with the utilization of OSE personnel. In 2019 there were an estimated 6,413 undiagnosed cases of TB (~16% of TB burden), and 25% of PLWH were unaware of their status, the majority of them in key populations (KPs)<sup>67</sup>. OSE for HIV, TB, Malaria, and other diseases/programs are in charge of surveillance data entry into MESI/Trackers at the facility/departement level, with their work complemented by ASPCs and auxiliary nurses.

##### ***Current gap***

Malaria surveillance is not yet geared nationwide for malaria elimination. Malaria Zero is a consortium composed of MSPP (represented by the PNCM), CDC, CDC Foundation, CHAI, PAHO, Carter Center, Tulane University, London School of Hygiene and Tropical Medicine and the MoH of the Dominican Republic. The focus of the consortium is elimination in Hispaniola, but their field work is almost exclusively based in Grand Anse, the departement of Haiti with highest prevalence of malaria. Efforts are extensive including training on mapping and modeling in this area. Extension of work beyond Grand Anse is minimal, aside from the roll-out of the DHIS-2 Tracker (developed by CHAI) by DELR to nearly 700 facilities. CHAI is supporting the roll-out in a very limited capacity, and a single individual at DELR is responsible for training all sites on the DHIS-2 malaria tracker. Thus, there is a gap in training and supervision for the tracker, and lack of planning for tablet-related issues in the field. In addition, the DHIS-2 Malaria tracker is based on an older DHIS-2 version and is not fully interoperable with SISNU at this time. There does not appear to be much coordination with PNLM/UCMIT to extend other efforts for malaria elimination around the country, and there is no apparent integration of Malaria Zero with the TB or HIV programs.

In addition to the DHIS-2 malaria tracker, staff at USAID have developed a DHIS-2 TB tracker which is housed at Digicell. This tracker system is independent of the malaria tracker, and details on its use, reliability, and capability were not evident through our discussions with other implementing partners. DELR noted that they believed the TB tracker was only being used at 26 sites in Haiti.

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<sup>67</sup> Government of Haiti (2020). HTW 2018. Funding request for the Global Fund.



### ***International experience and best practices***

The US provides a good example for attempting to integrate STD surveillance with HIV, hepatitis and/or TB. Several states and local programs have already integrated prevention and control activities. By establishing a workgroup, they have promoted integration between STDs and other diseases. This is relevant since patients seen with STDs have higher risk for hepatitis B so vaccination would be recommended. Another example is that HIV, sexually transmitted diseases (STDs and hepatitis can be spread through the same behaviors, so similar prevention messages and interventions could be pooled. Among the most common integration barriers are HIV data confidentiality and incompatibility of databases.<sup>68</sup>

In the African region the Integrated Disease Surveillance and Response (IDSR) strategy has been implemented since 1998. Evaluations of this strategy have highlighted the importance of having adequately trained peripheral staff. To address high turnover and other issues one study proposed eLearning/e-Teaching platform, systematic in-service and pre-service training and moving from workshops to simulation exercises.<sup>69</sup>

### ***Recommendations***

- 1. Cross-training of TB-Malaria OSEs.** As malaria nears elimination, the numbers of cases will put funding at risk, and lead to a lower level of interest in maintaining a skilled surveillance workforce. Malaria surveillance (case detection, foci investigation, travel history) requires a similar skill set as for TB (contact tracing, travel history). We recommend a workforce be trained (OSE, with additional smaller number of ASCPs) in principles of surveillance for malaria and TB, as well as ability to enter data into Trackers for each of these diseases with interoperable platforms. Programs should limit “disease-specific” surveillance officers to reduce costs and make surveillance more sustainable as diseases become rarer and donor aid is replaced with national funding. It may be prudent to have the same workforce trained in both diseases to be able to respond to cases in a rapid timeframe, particularly as both diseases become rarer with time. In addition, this same workforce can be charged with surveillance of other vector-borne diseases or transmissible diseases. For instance, OSE trained in TB contact tracing could quickly be repurposed for COVID-19 contact tracing.
- 2. Strengthen surveillance at the departmental level through training and digital reporting tools.** In order to achieve and maintain malaria elimination, all Departments must have a trained and skilled workforce and real-time digital reporting available. The MSPP should leverage the training in areas such as GIS mapping and modeling occurring in Grand Anse by Malaria Zero, to train a workforce throughout the country with these skills.
- 3. Malaria surveillance integration with lymphatic filariasis (LF) elimination and other vector-based disease surveillance.** Given the overlap of these strategies for surveillance, DELR, CDC, Pan-American Health Organization (PAHO), and other entities should consider formal integration of LF and malaria surveillance/elimination programs in areas where LF mass drug administration (MDA) is still occurring.

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<sup>68</sup> Dowell, D., Gaffga, N. H., Weinstock, H., & Peterman, T. A. (2009). Integration of surveillance for STDs, HIV, hepatitis, and TB: a survey of US STD control programs. *Public Health Reports*, 124(2\_suppl), 31-38. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2775398/>

<sup>69</sup> Fall IS, Rajatonirina S, Yahaya AA, et al (2019). Integrated Disease Surveillance and Response (IDSR) strategy: current status, challenges and perspectives for the future in Africa. *BMJ Global Health*. Retrieved from <https://gh.bmj.com/content/4/4/e001427#F1>

### ***Possible metrics for monitoring***

- Number of OSE/ASCP dually trained in both malaria and TB surveillance
- Number of surveillance staff trained in GIS mapping and modeling (using the Grand Anse 'model)
- Analysis of malaria and LF joint elimination possible strategies in areas with LF MDA

### **Opportunity #7: Merge pharmaceutical storage facilities and systems**

#### ***Progress to date***

Currently, PEPFAR and GF both utilize the same firm (Chemonics) for central supply storage of HIV health products with delivery direct to facilities. In contrast, the TB and Malaria programs funded by the GF and CDC utilize the Essential Medicines Program (PROMESE) and additional layers of storage to get to the facility level (1 or 2 depots by departement). The GF also has a third facility in Tabarre to stock ambient products (long-lasting insecticidal nets (LLINs), condoms/lubricants) and expired drugs because of a shortage of space in the other two warehouses. There is interest from the MSPP and certain donors in building a single unified storage facility, but the cost may prove to be prohibitive at this stage. In the meantime, the GF and PEPFAR are planning to assess the option of having a single third-party entity manage the different storage facilities, while a separate effort is already in place to develop an integrated logistics management information system (LMIS).

#### ***Current gap***

The GoH, in coordination with donors, has started its planning of a central storage and government-led distribution system. The SNADI Plan 2018-2022 lays the 5-year objectives and operational plan. This process has been led by the Directorate of Pharmacy, Medicines and Traditional Medicine (DPM/MT), who expressed that a strong resource mobilization strategy is needed to build this block of the health system strengthening. Validation of a roadmap by a Technical Committee (including Organisation Haïtienne de Marketing Social pour la Santé (OHMASS) and USAID) was planned for the first quarter of 2020 to focus on storage and quantification. While the development of the national supply chain system is key, it will demand time, resources and a strong donor coordination/resource harmonization for longer-term implementation.

#### ***International experience and best practices***

The Dominican Republic has an Essential Medicines Program and Logistic Support Central commonly denominated PROMESE/CAL. PROMESE/CAL had three storage facilities, two in Santo Domingo and one in Santiago. The system is decentralized, distributing drugs and health products to the 9 regional health services (SRSs). Annually, PROMESE/CAL receives a budget of 19.1 M USD for management, operation, distribution and personnel. In parallel, the Government stores HIV drugs and health products in a private storage (YOBEL) in Santo Domingo. Every week YOBEL delivers these products to PROMESE for them to distribute to NGOs and regional warehouses. A supply chain study led by HFG-USAID found that it was 40% more costly than the public model. This study recommended to merge the storage of HIV products into PROMESE/CAL. To preserve the door to door distribution to certain clients PROMESE/CAL would sign agreements with certain facilities and NGOs as needed.<sup>70</sup>

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<sup>70</sup> Valdez, Claudia, Jonathan Cali, Nassim Diaz, y Carlos Avila (2017). Evaluación de la Gestión de Suministros y Flujos de Financiamiento y Gasto de Antirretrovirales e Insumos para el Diagnóstico de VIH. Bethesda, MD y Santo Domingo, República Dominicana: Proyecto de Financiamiento y Gobernanza en Salud, Abt Associates Inc.

Another option, used widely in some countries such as Angola, Senegal, and Kenya, is outsourcing to the private sector (also known as third-party logistics, abbreviated as 3PL or TPL), with encouraging results. For example, Angola has a mixed warehousing, inventory management and distribution system. USAID/PEPFAR/PMI and the GF both use private firms (Neopharma and Bollore) for warehousing and distribution of HIV and Malaria drugs and other health products. This 3PL collaboration while costly has streamlined and improved the effectiveness of donor investments in the supply-chain management. At the same time, the Government of Angola continues to use its own Central Store warehouses for other health products procured by the Government (including HIV, TB and malaria health products), family planning supplies, OI drugs, etc. Nevertheless, an analysis of the risk of diversion and non-compliant storage conditions through public sector needs to be carried out.

The table below highlights some of the pros and cons of the public, private and mixed models, which could help to inform the current discussions around supply-chain options for Haiti.

**Table 10. Comparison of public, mixed and private models for storage and distribution**

Model	Pros	Cons
Public	<ul style="list-style-type: none"> <li>Creates national ownership and builds capacities that, if successful, places the country in the sustainability path.</li> </ul>	<ul style="list-style-type: none"> <li>LMIC governments tend to experience high levels of turnover, thus constantly losing trained and skilled staff. This can become costly and create a myriad of inefficiencies in the short/midterm.</li> <li>Major financial investment in public infrastructure comes with major risks including lack of government commitment or sufficient supervision.</li> </ul>
Mixed	<ul style="list-style-type: none"> <li>While keeping the cost-saving element this model preserves the local capacity building aims.</li> </ul>	<ul style="list-style-type: none"> <li>There are few examples in the literature to guide this effort. It demands high level of commitment from both governments and donors.</li> </ul>
Private <sup>71</sup>	<ul style="list-style-type: none"> <li>Outsourcing distribution is a cost-saving strategy (savings can be one-third or more)</li> <li>Performance incentives for efficiency and to prevent stock-outs, in order to preserve their contracts. Private enterprises have more flexibility to manage its human resources (i.e. the public sector sometimes is restricted by union policies).</li> <li>Private operators have more flexible working hours, working longer or shorter shifts when needed.</li> </ul>	<ul style="list-style-type: none"> <li>Government gives up ownership and misses opportunities to develop know-how</li> <li>If the contracting process is suboptimal and/or the government/donors do not manage and enforce the contract, logistic issues might emerge as well.</li> <li>In some countries, it is difficult to find experienced operators, trained and equipped to manage the inventory and to comply with strict storage requirements.</li> <li>if an activity is not included in the contract/TOR, there is little flexibility to execute it without revision of the contract value.</li> </ul>

<sup>71</sup> Agrawal et al. (2016). Moving Medicine, Moving Minds: Helping Developing Countries Overcome Barriers to Outsourcing Health Commodity Distribution to Boost Supply Chain Performance and Strengthen Health Systems

## **Recommendations**

- 1. Organize joint national stakeholders' consultation meetings to discuss the different models and decide jointly on the short-term plans to strengthen the overall storage and distribution system (public, private, or mixed).**
- 2. As a short-term solution, create a public private partnership (PPP) to have one logistics operator for the different storage facilities** (modifying the current situation where there are multiple operators: PAHO for PROMESSE, Chemonics for PSM and PSI for Tabarre).

## **Possible milestones for monitoring**

- MoU between GoH and donors after the results of the TA. If PPP for a single logistic operator, then to have this model implemented by December 2021.

## **Opportunity #8. TB and malaria microscopy integration**

### **Progress to date**

Malaria lab testing involves rapid diagnostic tests (RDTs), microscopy, and very limited drug resistance and serologic testing. Currently, approximately 80% of cases of malaria are detected by RDT with the remainder by microscopy. Proficiency in microscopy tests seem to be decreasing in public sector and appears to be somewhat better in the private sector. LNSP is supportive in improving/maintaining microscopy proficiency at level 2 facilities. PAHO has led training of laboratory staff for microscopy and RDT sentinel sites. Of note, LNSP states that there is an External Quality Assessment (EQA) unit that has been created that solely focuses on making QA/QC panels for various tests. For TB, sputum microscopy occurs at 230 labs, with 60 fluorescent microscopes in high TB-volume sites. We were unable to document the QA/QC system for TB microscopy.

### **Current gap**

Malaria microscopy proficiency and availability is declining. Approximately 300 of 854 sites can perform microscopy, but QA at these sites is lacking. According to the WHO, only 3 certified malaria microscopists are present in Haiti. In addition, it appears that there is no funded malaria microscopy slide transport in place. Microscopy must be maintained and performed at high quality to achieve malaria elimination, confirm RDT testing in a subset of samples, and estimate parasite density in severe malaria cases. The latter is particularly critical, as RDTs provide only qualitative results, and microscopy provides the most reliable method to estimate parasite density. This recommendation does not contradict TRPs recommendation since it is tightly related to QA/QC (“the large expansion of microscopy testing without demonstrated need or plans for quality control is concerning”).<sup>72</sup> While it is true that RDTs are better suited to expansion of community case management and rapid treatment in the elimination environment, microscopy is still considered the “gold standard” for malaria and experience in African countries show that losing microscopy capacity could create a severe risk for detecting severe malaria cases, transmission by species other than falciparum or transmission through falciparum with the gene deletion.

TB sputum microscopy remains the mainstay of TB diagnosis given the lack of sufficient GeneXpert platforms. Little interaction between the malaria and TB microscopy programs in terms of personnel or QA/QC is in place. QA/QC is critical for both platforms, and requires a skilled workforce, and a significant investment of time. By

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<sup>72</sup> TRP (2020). TRP Review Haiti (28/04/2020).

integrating microscopy capacity with TB, Haiti has an opportunity to prevent the shortage of trained microscopists in malaria that is already affecting African countries.

### ***International experience and best practices***

In Nigeria, five TB microscopy centers were selected for implementing joint TB and malaria microscopy quality assessment. As a result, QA improved in four laboratories, and full integration of QA was achieved in two of them, proving the feasibility of this integration opportunity.<sup>73</sup> This result is echoed by a similar intervention in Ethiopia where the quality of both TB and Malaria microscopy increased significantly after the pilot. For this study laboratory quality improvement tools (LQITs) were developed and implemented.<sup>74</sup>

### ***Recommendations***

A pool of certified trained technicians for microscopy for both malaria and TB should be formed/maintained and be based at Level 2 labs so that QA/QC can be performed more efficiently. As malaria cases decrease, less microscopy will be conducted, and proficiency needs to be supported for elimination to be successful. Integrating TB and malaria microscopy training/personnel/QA/QC will improve and ensure the maintenance of this critical lab service. LNSP is supportive of all Level 2 labs (~10 Departmental and 1 Teaching) having trained expert microscopists for TB and malaria available.

### ***Possible metrics for monitoring***

- Number of trained technicians for microscopy for malaria and TB
- Number of Level 2 labs that have microscopists for malaria and TB

## ***3.2 Leadership and Governance***

### **Opportunity #9: Strengthen multi-disease leadership and governance at central and departemental level**

#### ***Progress to date***

UCMIT (previously known as UCP, Unite de Coordination des Programmes) is the governing body for the implementation of all infectious diseases control programs in Haiti. UCMIT has been in place and is supported by legal provision since 2005 (MSPP organic law). The unit is run by a Director who reports to the General Director of the MSPP and oversees the PNLT, PNLs, PNCM and any other infectious diseases responses. Recently the leadership of this unit has put all three programs under the same roof, sharing the same working space and materials. The UCMIT leadership team is composed of a finance coordinator and an administrative coordinator who work under the leadership of the UCMIT director.

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<sup>73</sup> Sarkinfada, F., Aliyu, Y., Chavasse, C., & Bates, I. (2009). Impact of introducing integrated quality assessment for tuberculosis and malaria microscopy in Kano, Nigeria. *The Journal of Infection in Developing Countries*, 3(01), 020-027. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/19749445>

<sup>74</sup> Marinucci, F., Manyazewal, T., Paterniti, A. D., Medina-Moreno, S., Wattleworth, M., Hagembe, J., & Redfield, R. R. (2013). Impact of horizontal approach in vertical program: continuous quality improvement of malaria and tuberculosis diagnostic services at primary-level medical laboratories in the context of HIV care and treatment program in Ethiopia. *The American journal of tropical medicine and hygiene*, 88(3), 547-551. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3592539/>

UCMIT's team is supposed to work with different program accountants and logistic managers to harmonize different aspects of each program. However, this becomes challenging since the UCMIT lacks its own budget to carry out its planned activities whilst the programs receive direct funding and have reporting responsibilities to the donors (namely CDC, PEPFAR and the Global Fund). Consequently, each program has created their own M&E, supervision, administrative and finance teams to address the grant requirement of different donors. MSPP's leadership has started to furnish the UCMIT office with its own budget but this has not been matched by donors.

Donors are engaging more and more with UCMIT and there are more and more program staff referring to themselves as UCMIT employees. This positive sign indicates that programs are starting to adapt to the new combined organizational structure.

Over the course of many years of implementing the HIV, TB and Malaria programs have also placed at least one representative in each of Haiti's 10 departements. However, these disease program staff do not work together and often their roles are limited by the dominance of personnel from the MSPP central office. There have been some tentative efforts to unify and harmonize the programs' activities at the departmental level, but this has not been successful.

### ***Current gap***

While the majority of actors interviewed recognized that the cohabitation of programs under the UCMIT has helped improve coordination, they also suggested that the UCMIT needs to have a more clearly defined role and to have stronger capacity if it is to go further with integration of HIV, TB, and Malaria leadership. Possible areas for expansion could include: integrated strategic planning, monitoring, supervision, human resources and training, and communication with other MSPP units and external partners.

Each program has their own strategic plan, with different timelines. There is a gap in coordinating each program so that their timelines match the overall MSPP strategic plan (MSPP Plan Directeur). There does not appear to be any synergies among the existing strategic plans. TB (2015-2019), HIV (2018-2023) and Malaria. Furthermore, there is no roadmap for implementing activities planned by UCMIT, and standard operating procedures for the Unit.

There is also a gap at the departmental level where each staff member still considers him/herself as an employee of HIV, TB or Malaria programs and not an employee of UCMIT. This is reinforced by donors' funding arrangements which are fragmented. There is a need for comprehensive discussion between the MSPP and the donors in order to create a more efficient way of funding the departements.

### ***International experience and best practices***

The political challenges of HIV/TB integration are well documented. For instance, the perceived challenges mentioned by stakeholders in Ghana include the potential increase in workload, the clinical complications associated with joint management and the potential leadership crisis. Nevertheless, it has been observed that

when integration at the leadership levels trickles down to the local level it translates into improved TB/HIV data collection, management structures and co-infection treatment.<sup>75</sup>

A study of the integration of “vertical” neglected tropical diseases (NTD) control programs in Uganda, Tanzania, South Sudan, and Mozambique,<sup>76</sup> stressed the importance of forming a program secretariat or ‘task force’, composed of the managers of disease-specific national programs to coordinate integration and provide accountability. The taskforce was responsible for strategic planning, including the identification of integration goal(s), the desired output(s) to be achieved within a specific timeframe (usually 3–5 years), and the formation of clear structures for coordination, implementation, and reporting.

The Indian government developed a joint national TB/HIV policy and formed coordination committees chaired by the administrative heads of both diseases at each of the governmental levels, created technical working groups led by program managers at each of the levels, and added workers to strengthen joint supervision and monitoring programs (especially important the beginning of the integration initiative).<sup>77</sup> These committees were designed to provide platforms for the development and implementation of national and state-specific policies, facilitate the exchange of data among stakeholders, and assist in the identification of issues over the course of the initiative.

### Recommendations

#### 1. Establishing a roadmap to develop the organizational structure of the UCMIT for the next five years.

Below is an outline of such a roadmap, which needs to be further developed by the UCMIT in consensus with the program leads.

**Table 11. Roadmap to develop UCMIT's organizational structure (draft)**

Phase	Activities	Date
Inception phase	Review the UCMIT organigram and those of the programs under the UCMIT, the analysis should include how many of those positions are currently vacant and identify redundancies.	Second quarter 2020
	Draft a report with the positions and functions that are redundant across programs and that represent some cross-cutting functions that the UCMIT leadership could take. M&E, Supervision, Budgeting and Strategic planning are some of the opportunities for HR integration. Document the pros and cons of integrating the selected functions under the UCMIT leadership.	Second quarter 2020
Transition phase	Designing the ideal structure/organigram of the UCMIT. Estimate the need in terms of human and physical resources.	Second semester of 2020

<sup>75</sup> Amo-Adjei, J., Kumi-Kyereme, A., Amo, H. F., & Awusabo-Asare, K. (2014). The politics of tuberculosis and HIV service integration in Ghana. *Social science & medicine*, 117, 42-49. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/25042543>

<sup>76</sup> Kabatereine, N. B., Malecela, M., Lado, M., Zaramba, S., Amiel, O., & Kolaczinski, J. H. (2010). How to (or not to) integrate vertical programmes for the control of major neglected tropical diseases in sub-Saharan Africa. *PLoS neglected tropical diseases*, 4(6). Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2894133/>

<sup>77</sup> World Health Organization (2015). Scaling up for collaborative TB/HIV activities in concentrated HIV epidemic settings. A case study from India Retrieved from [https://apps.who.int/iris/bitstream/handle/10665/154076/9789241508490\\_eng.pdf?sequence=1](https://apps.who.int/iris/bitstream/handle/10665/154076/9789241508490_eng.pdf?sequence=1)

	Piloting the integration of functions for one function (i.e. M&E) without changing the structure, physically integrating the team in one office. Reassessing the ideal staffing and reallocating some of the personnel to other functions or to the departmental level.	First Quarter 2021
	Pilot at least other areas and publish the final version of the organigram (ideally create a webpage, as part of the MSPP website) where documents and reports can be uploaded	2022
Optimization phase	Developing administrative and programmatic tools for UCMIT Explore further options for integration at the departmental level. For example, 1. UCMIT to take the lead by gradually installing a unified disease team at each of the 10 Departements. This team could be composed of existing qualified staff currently working for the disease programs, with joint tasks including supervisory visits, data quality assessments and maintaining a close communication with departmental pharmacist to reduce ruptures in the supply of drugs and health products.	2023str

Source: authors.

### **Possible metrics for monitoring**

- A roadmap for the development of the UCMIT has been produced, discussed and disseminated
- The inception phase and the design of the ideal structure/organigram of the UCMIT has been completed by the end of 2020.
- An overall M&E coordinator has been selected, and job descriptions have been issued for all M&E staff
- Comprehensive job description, work plan, and budget for departmental UCMIT staff

### **Opportunity #10: Promote expanded donor coordination within and across HIV, TB and Malaria**

#### **Progress to date**

A Health Sector Coordination Roundtable (Table Sectorielle Santé) led by the MSPP and composed of technical and financial partners, NGOs, and MoH directorates meets from time to time (last meeting was in May 2019), to discuss and develop the vision and priorities for the period 2018-2022 with the ultimate goal of achieving UHC by 2030. This mechanism has helped to increase transparency in laboratory services. The short-term has been to create a national lab and surveillance unit with a consolidated budget across all major donors.<sup>78</sup>

Other donor coordination spaces include Haiti’s Global Fund Country Coordinating Mechanism (CCM), the Cellule de Cooperation Externe (part of the UEP), and the Global Financing Facility (GFF) Platform and the recently created “Cellule de Cooperation Externe.”

The GFF is a mechanism that help countries to improves investments in health and nutrition. By building government-donor partnerships to prioritize high-impact underfunded areas and mobilize resources to fill those needs. In Haiti the GGF Platform was launched in December 2019 with the support of the World Bank. The GFF is chaired by the Director General of the MSPP and has more than 30 members including government officials, donors, private sector, youth organizations, root associations and the academia. The final aim of the GFF is to

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<sup>78</sup> Interview with WB – Sunil Rajkumar



produce an investment case for three main areas: reproductive health, community health and nutrition. The community health area is highly relevant when analyzing service delivery of HIV, TB and malaria services. According to the GFF leader in Haiti, the community health area has four strategic components:

1. **Strategic Planning.** Create a new strategic plan for community health. The World Bank, UNICEF and the Global Fund were involved in this component which involved facilitating a three-day consensus workshop where the specific prevention, detection, and treatment tasks of the ASCPs were defined.
2. **Building and making available tools at the community level.** These tools include booklets summarizing the strategy (cahier ASCP), protocols, aligning technical forms with norms, and training materials.
3. **Modeling the reallocation of ASCPs.** A Swiss Institute is providing technical assistance to redistribute the human resources at the community level to improve the quality of care and increase treatment adherence. Preliminary results of this analysis are already available.
4. **Costing the prioritized interventions.** In order to integrate this component into the investment case and the consequent resource mobilization strategy.

By early March the next steps of the GFF project were to finalize the Community Health Strategy and start to develop the operational plans (1 national and 10 departmental plans).

### ***Current gap***

While the Global Fund, the World Bank and CDC have been working together in recent years, though the Roundtable, other partners such as PAHO, USAID and CHAI have not been as fully involved. It also appears that the Roundtable approach has not yet been extended to other areas such as procurement and supply chain, health information systems, and community health workers where more integration across diseases as well as across funders would be desirable to increase efficiency.

### ***International experience and best practices***

Donor coordination can be analyzed as a three-stage process, where the first stage is donor coordination, the second is aid coordination, and the third is development coordination.<sup>79</sup> Haiti is possibly in the first stage but could transition to aid coordination. In order to follow that path the following tools could be considered by donors.

**OPTION 1. Joint Assistance Strategies (JAS)** to establish a clear division of labor among donors. JAS in Tanzania involves 45 donors and discusses not only the role of the Tanzanian government and donors, but of the media, private sector, and academic institutions as well. The key lessons from JAS in Tanzania, Uganda and Zambia are to: 1) involve the Ministry of Finance (MoF) as well as Health, 2) promote full transparency and consultation with government, 3) establish aid goals delivered through general budget support, 4) make a 2-3 year plan for health-aid, and 5) use the JAS to discuss each donor's positions on key issues such as the use of SWAPs, direct budget support, silent partnerships and reduction of their presence in selected sectors. JAS might be an option for Haiti.

**OPTION 2. Twinning arrangements:** Recipient governments' development assistance coordination bodies are generally chaired by the Ministry of Finance to manage and disburse incoming resources. Nonetheless, some governments nominate specialist bodies to coordinate donors' work. In Indonesia, for example, the Corruption Eradication Commission was in charge of donor coordination, identifying needs for financial and technical support

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<sup>79</sup> World Health Organization (2009). Review of Coordination Mechanisms for Development Cooperation in Tajikistan. Retrieved from [http://www.euro.who.int/\\_data/assets/pdf\\_file/0013/106411/E93771.pdf](http://www.euro.who.int/_data/assets/pdf_file/0013/106411/E93771.pdf)

from development agencies and frequently meeting donors to exchange information about their respective activities. This seems less feasible in the case of Haiti since most of the external resources are channeled directly through the UGP.

### **Recommendations**

Following the example of the sample transportation system, donors could focus on health systems strengthening areas highlighted above where HIV, TB, Malaria, and possibly other disease programs could come together, e.g., information systems, warehousing/supply chain, surveillance, etc. Key steps in coordination used for lab sample transport included: establishing a clear plan with ToRs; signing an MoU; setting up accountability mechanisms; and, harmonizing funding (managed through the UGP).

As next steps we propose the following short-term activities:

1. **Create a forum/group on donor health aid integration** with appropriate terms of reference (ToRs)
2. **Create a donor health aid integration Roadmap**
3. **Ask the Director General to appoint the GoH representative for this group and schedule regular donor-government meetings** to report progress
4. **Create subgroups to address at two additional areas of integration during the next three years**

The table below illustrates possible membership in donor-government health aid coordination subgroups based on ongoing projects, technical expertise and interests expressed in stakeholder interviews:

**Table 12. Example of donor coordination subgroups to address integration opportunities**

Possible Lead Partner	Integration area	Subgroup members
CDC (national best practice)	Labs transportation	WB, GF, CDC foundation, CHAI
USAID	Information Systems	WB, PAHO, CDC, CHAI
Global Fund	Human Resources	WB, PAHO, USAID
CDC	Surveillance	GF, CHAI, PAHO
PAHO	Supply chain	GF, GAVI, PAHO

### **Possible metrics for monitoring**

- Creation of the forum/subgroups and ToRs
- MoU between GoH and partners, including budget harmonization and agreement on expanded management of donor funds by UGP
- Work plan for donor health aid coordination in various areas
- Bi-annual reports to GoH on donor aid coordination and integration involving HIV, TB and Malaria

### **3.3 Financing**

#### **Opportunity #11: Use existing results-based financing tools to promote integration in PHC**

#### **Progress to date**

Results Based Financing (RBF) in Haiti began when Management Sciences for Health (MSH) started the discussion around incentives for performance to support health sector reform. In 2012, with the Unité de Contractualisation (UC) was created to pilot RBF in 7 facilities of the Northeast departement. In 2014-2015 the pilot was expanded

based on a World Bank assessment. As of March 2020, 150 facilities have been contracted under the RBF model in 8 of Haiti's 10 departements.

The RBF scheme currently rewards performance at four levels: health services (CS and CDR), the UAS, Centrales Départementales d'Approvisionnement en Intrants (CDAI) and the Departemental Directions. After the Community Health Strategy is finalized, community indicators will also be added. The indicators for health facilities measure: 1) organization; 2) type and volume of services offered; and 3) care environment (i.e. hygiene and waste management).

The targets are based on national programmatic goals, and each departement organizes a workshop to define targets for each indicator at facility level. RBF indicators are assessed on a quarterly basis by an external firm. Premiums are awarded to facilities based on their performance, with half the money allocated to infrastructure and equipment improvements and the other half to health workers based on responsibility levels, attendance, and individual performance. Awards to facilities vary from 350 to 16,000 USD.

The RBF project is funded by the World Bank, USAID and the Government of Canada. The current plans are to extend the RBF indicators to 50 more facilities to reach a total of 200. The project is being evaluated and results are expected by June 2020.

### ***Current gap***

The RBF indicators include HIV service volume but not quality, e.g., percent of ART patients achieving viral suppression. TB has few indicators and there is nothing on coinfection and quality of care. Malaria indicators are not yet included in the RBF program. Expanding the use of HIV, TB, and malaria in the RBF project could help to enhance integrated monitoring and financing of the three diseases. It is important to coordinate with donors who are supporting RBF sites so that they understand the indicators collected and how this links to financing and incentives, especially if there are HIV, TB or malaria targets included as part of RBF.

### ***International experience and best practices***

There are several different programs in Latin America that use RBF to incentivize and monitor facilities and healthcare workers at different levels for achieving pre-defined metrics. Belize for example has a program that uses pay for performance to improve and monitor efficiency and quality of services delivered under their National Health Insurance Program. This program contracts and reimburses both the public and the private sector.<sup>80</sup> Another program that has had success in changing outcomes for low-income mothers and their infants is Argentina's Plan Nacer Program<sup>81 82</sup>, which uses MCH performance metrics and the payment by both national and subnational governments.

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<sup>80</sup> Bowser, Diana, Ramon Figueroa, Adeyemi Okunogbe\*, and Laila Natiq\*. 2013. A Preliminary Assessment of Pay for Performance, Health Systems, and Health Outcomes in Belize. *Global Public Health* 8 (9): 1063-1064 doi: 10.1080/17441692.2013.829511. Epub 2013 Sep 13

<sup>81</sup> Sabignoso (2017). Strengthening the purchasing function through RBF in a Federal Setting: Lessons from Argentina's Programa Sumar. Retrieved from [https://www.who.int/health\\_financing/events/D3S1-Sabignoso-Sumar-Montreux.pdf](https://www.who.int/health_financing/events/D3S1-Sabignoso-Sumar-Montreux.pdf)

<sup>82</sup> Musgrove, P. (2010). Plan Nacer, Argentina: Provincial Maternal and Child Health Insurance Using Results-Based Financing (RBF). mimeo.

## ***Recommendation***

- 1. If the ongoing impact evaluation of the RBF project demonstrates that RBF is incentivizing better quality and health outcomes, the UC could add relevant HIV, TB, and malaria indicators to promote greater integration.** Further analysis of RBF impact in these areas is warranted
- 2. Match RBF funded facilities with those supported by the Global Fund, and discuss ways in which GF financing could be aligned with RBF principles and practices to ensure that they are used to incentivize better performance at the facilities in HIV, TB, and malaria.**

## ***Possible metrics for monitoring***

- HIV, TB and Malaria quality indicators proposed and incorporated
- Indicators measured and rewarded in the RBF scheme

## ***3.4 Service Delivery***

### **Opportunity#12: Create/expand an integrated package of services for incarcerated populations**

#### ***Progress to date***

In Haiti, as in many other LAC countries, the HIV epidemic is focused in key populations. In Haiti HIV prevalence rates among MSM (12.9%), SW (8.7%) and prisoners (3.8%) are higher than in the general population (2%). Migrants are another population more heavily exposed to the three diseases.<sup>83</sup>

67% of the incarcerated population is concentrated in five prisons (Port-au-Prince, Croix-des-Bouquets, Cap Haitien, Cayes and Saint-Marc). According to the most recent GF Funding Request, 62% of the inmate population has been reached by GF funded interventions.

#### ***Current gap***

By 2019, the HIV prevalence in prisoners was 4.4%, incidence for TB was 20 times that in the general population, and malaria represented 34.8% of the pathologies found in this setting.

Haitian prisons have been labeled as the most overcrowded in the world with an occupancy rate exceeding 400%.<sup>84</sup> While international standards recommend at least four-square meters of living space per person, in Haiti the average prison has less than a meter. Overcrowding in Haitian prisons promotes a higher prevalence of HIV, TB and Malaria. Currently HIV and TB are only treated in 6 of 24 prisons in-country through the organization "Health through Walls" (with support from PEPFAR and AIDS Healthcare Foundation (AHF) for HIV and GF for TB).

#### ***International experience and best practices***

The United Nations Office on Drugs and Crime (UNODC) has published a policy brief titled "HIV prevention, treatment and care in prisons and other closed settings: a comprehensive package of interventions." In this document, it proposes a set of 15 interventions including: information, education & communication (IEC), condoms, post-exposure prophylaxis (PEP), HIV testing, counseling and care, prevention, diagnosis and treatment

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<sup>83</sup> Government of Haiti (2020). HTW 2018. Funding request for the Global Fund.

<sup>84</sup> France24 (2019). Haiti's dicey prison conditions made worse by crisis. Retrieved from <https://www.france24.com/en/20191021-haiti-s-dicey-prison-conditions-made-worse-by-crisis>

of TB and vaccination, diagnosis and treatment of viral hepatitis.” Best practice examples of the implementation of this package could be found in Vietnam, the Republic of Moldova and Nepal.<sup>85</sup>

### **Recommendations**

- Add malaria to the existing sites providing HIV/TB treatment and increase the scope and coverage of these interventions in other prisons.
- Create and deliver an integrated package of services for the incarcerated population

### **Possible metrics for monitoring**

- Number of inmates that received the package
- Number of inmates screened for HIV, TB, malaria, STDs, Hep C, etc.
- Number of inmates treated for HIV, TB, malaria, STDs, Hep C, etc.

### **Opportunity#13: Reinforce and expand integrated TB-HIV services**

#### **Progress to date**

HIV and TB are two big killers in Haiti and often co-exist together within the same patient, with 14-16% of persons with active TB also infected with HIV, and with about 2% of HIV patients with active TB. The Haitian Ministry of Health, through its technical bodies (PNLT and PNLs) has adopted a policy stating that HIV and TB should be managed in an integrated manner at the point of care.

In the early days of the HIV program in Haiti, very few health facilities, except for several PIH supported sites such as Thomonde Health center, Lascahobas, and Change, implemented integrated HIV/TB diagnosis, counseling, and treatment. Today, most health facilities run by the main HIV networks (e.g. UGP, PIH, GHESKIO, CMMB) offer partially integrated HIV-TB programs (i.e. HIV testing and treatment and TB testing).

#### **Current gap**

The recent 2018 SPA showed that 46% of 1033 health facilities reported having HIV testing services and 16% offered ART. Of those facilities providing care and support to PLHIV approximately 80% report providing TB treatment but only 65% had first-line TB drugs available on the day of the survey. In absolute terms, the SPA reports that only 313 facilities (~31%) offer HIV/TB diagnosis and treatment services. TB patients tested for HIV went from 73.2% in 2011 to 97.6% in 2019<sup>86</sup>. Of the 268 CDT and 166 HIV-ART sites only 95 of them offer HIV services. Some of the CDTs do not offer HIV diagnosis while other do rapid tests but refer for ART to different facilities. Loss to follow-up rate of coinfecting patients is high at 14.2% in 2018.

While testing appears to be available and conducted for HIV and TB patients in an integrated manner, the major bottleneck is the lack of TB treatment available at certain HIV clinics, or vice versa. In these settings, patients must be referred to other clinics, and there was consensus that this leads to significant loss to follow-up. Scale up of integrated treatment alongside of integrated testing must be achieved to ensure adequate care continuum

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<sup>85</sup> UNODC (2013). HIV Prevention, treatment and care in prisons and other closed settings: a comprehensive package of interventions. Retrieved from [https://www.unodc.org/documents/hiv-aids/HIV\\_comprehensive\\_package\\_prison\\_2013\\_eBook.pdf](https://www.unodc.org/documents/hiv-aids/HIV_comprehensive_package_prison_2013_eBook.pdf)

<sup>86</sup> Government of Haiti (2020). HTW 2018. Funding request for the Global Fund.

metrics. Improved linkage of care to TB sites should occur (using ASCPs to escort patients between HIV-TB sites), and/or the addition of TB care at all HIV sites.

On the donor side, for the GF HIV 2018-2020 grant, the GF has supported eight networks for HIV and six networks for TB, but only two networks have received funding for both diseases. As a result, some sites will only offer one disease service. This has resulted in fragmentation at the point of service delivery or lack of continuity at the same facility, for example when HIV services are available for a full shift of eight hours while TB services are only available for two hours.

Overall, TB standalone clinics/services are at higher sustainability risk than the HIV-TB integrated model or the HIV standalone clinics because of their aging staff (retirement without replacement) and because they have fewer sources of external funding.

### ***International experience and best practices***

In Rwanda the integration of TB/HIV services between a clinic that offered HIV VTC, treatment and care and TB diagnosis (but no treatment) and a TB clinic that offers diagnosis and treatment, and HIV treatment. The key steps they followed to carry out these interventions were: (1) appointing staffing for overseeing integration between the two sites; (2) creating weekly multidisciplinary team meetings to discuss the care and treatment of coinfected patients; (3) training the integration staff on provider-initiated HIV testing and counselling (PITC); (4) PITC was implemented in TB patients, those who tested HIV-negative 3 or more months before the start of TB treatment were counseled by the HIV/TB staff during the intensive phase of anti-tuberculosis treatment. Blood-sampling was transported every night to the VCT programme and post-testing counseling was performed on the next day when receiving the Directly observed therapy (DOT); and finally (5) HIV+ patient was escorted by the HIV/TB staff to the HIV clinic or an HIV nurse came to the TB clinic to see the patient.<sup>87</sup>

In December 2008, a separate, outdoor integrated “One-Stop Shop” TB/HIV clinic was instituted for attendees of the HIV clinic at the Infectious Diseases Institute in Uganda.<sup>88</sup> In this clinic, TB suspects and patients diagnosed with TB could access care for both diseases by the same staff. General HIV clinic personnel were trained to recognize common TB symptoms and to direct patients suspected to have TB to the integrated clinic for assessment. Staff used a set of forms to help guide clinicians in the appropriate management of co-infection. Logistical issues, ideas for improvement, and difficult cases were discussed at weekly team meetings between staff of the “One-Stop Shop” and the Infectious Diseases Institute.

### ***Recommendations***

In order to 1) strengthen TB care and 2) decrease loss-to-follow-up of co-infected patients the recommendations are to:

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<sup>87</sup> Gasana, M., Vandebriel, G., Kabanda, G., Tsiouris, S. J., Justman, J., Sahabo, R., ... & El-Sadr, W. M. (2008). Integrating tuberculosis and HIV care in rural Rwanda. *The international journal of tuberculosis and lung disease*, 12(3), S39-S43. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5094056/>

<sup>88</sup> Hermans, S. M., Castelnuovo, B., Katabira, C., Mbidde, P., Lange, J. M., Hoepelman, A. I., ... & Manabe, Y. C. (2012). Integration of HIV and TB services results in improved TB treatment outcomes and earlier, prioritized ART initiation in a large urban HIV clinic in Uganda. *Journal of acquired immune deficiency syndromes (1999)*, 60(2), e29. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3396431/>

1. **Add TB Tx/Dx services to the HIV clinics.** This because HIV receives more donor funds and has more staff that could be trained in TB.
2. **Map disease prevalence and patient volumes and assess the number of HIV testing and treatment clinics and testing-only HIV clinics that could become HIV-TB diagnostic and treatment clinics.** The integrated model could follow the model of "Hopital La Paix". This service reorganization could be complemented with a pilot of health center networks with enhanced reference-counter reference.
3. **Establish a good referral system** where HIV and TB services are not provided at the same facility.
4. Integrate funding at the same facility offering TB and HIV services, avoiding multiple uncoordinated donor streams.
5. Ensure that TB/HIV staff working at facility levels receive training on both diseases.
6. Carry out joint planning for TB and HIV activities in each facility.

**Possible metrics for monitoring**

- 100% of HIV staff should also be able to provide TB services.
- Patients with co infection (TB and HIV) should be treated in the same health facility.
- 100% of TB patients should be tested for HIV.

All funds to health centers for HIV treatment should be from a single donor source

#### 4. Roadmap for Implementing the Priority Integration Opportunities

This section proposes a roadmap for implementation of the recommended actions for integration – what, who, and when. For many specific actions where technical assistance, or a study, or a workshop are needed, the estimated cost is included. For the large capital investments – for example, to consolidate and upgrade the warehousing system, the cost is very substantial and needs to be calculated carefully on the basis of follow up studies that go beyond the scope of this study.

This roadmap was built on the basis of conversations with our local consultant and other partners (e.g., CHAI, CDC). It still needs to be validated by the MoHSS team. Pharos tried repeatedly to arrange a validation meeting to be chaired by the Director of the UCMIT during July-September 2020, but he failed to deliver the needed audience citing pressing issues related to Covid and other matters. We would be pleased to return to Haiti in 2021 if the Covid situation permits it, to stage a final workshop with more local stakeholders. However, we feel confident that what is spelled out below is solid and feasible and matches the current preoccupations and wishes of Haitian leaders and their international partners. Already a number of recommendations have been incorporated in the pending Global Fund grant.

Opportunity	Selected activities for implementation	Responsible agency	Implementation period	Needed resources
1. Strengthen integrated knowledge and use of the lab sample transportation system	1.1 Strengthening the LNSP sample transport system with additional financial support	LNSP/UGP	2021-2023	TBD
	1.2 Incorporation/addition of “emergency” strategies for transport in the face of instability (Plan + implementation)	LNSP (with support from PEPFAR & the GF)	2021-2022	40,000

	1.3 Monitor PIH and other key NGOs usage of the sample transport system (use NGOs as sentinel sites)	UGP (PR for new RHSS grant)	2021	Already covered
2. Integrate POC testing platforms for TB, HIV VL, Hep C, EID and STI	2.1 Map the distribution of HIV and TB burden and determine the optimal placement and use of GeneXpert machines	PRs, PNCT, PNLS	2021	40,000
	2.2 Map the current GeneXpert sample transport sub-system	LNSP	2021	30,000
	2.3 Strengthen lab supporting supervision (by a third-party) to increase the use of existing GeneXpert machines	UGP/LNSP	2021-2023	Funding included in new GF grant
	2.4 Formalize the GeneXpert cartridge waste management plan	LNSP, PEPFAR, GF	2021-2022	To be defined by PEPFAR
3. Increase interoperability of both aggregated and disaggregated health information systems for the three diseases	3.1 Finalize the TA to create interoperability between the aggregated databases	USAID	Ongoing-2021	To be defined by USAID/GF
	3.2 Integrate the multiple “tracker” case-base notification systems into a single tracker database	UEP	2021-2022	To be defined by the UEP
	3.3 Create a call-center and database to register common problems and assist facilities	UEP	2021-2022	To be defined by the UEP
	3.4 Create a technical group with private labs and private sector providers to incorporate HIV, TB, Malaria data in national systems, including case-based surveillance and patient follow-up information.	UEP	2022-2023	20,000
4. Promote joint training for health care providers and lab staff	4.1 Conduct a census/database of trainings, indicating who was trained, cost, funding cost and funding source, training needs and create a comprehensive plan	UCMIT - DNRH	2021	40,000
	4.2 Re-start the training of HIV personnel in TB treatment (previously carried out by CHARESS) with the support of a third party	UCMIT-PNLS-PNCT	2021-2023	To be defined
5. Combine supportive supervision for the three diseases	5.1 Create an integrated supervision plan led by UCMIT with approval from the Director General	UCMIT	2021	40,000
	5.2 Integrate/standardize the different supervision tools (UCMIT, programs, UGP, LNSP, etc.) – Can be part of 5.1	UCMIT	2021	Already covered



	5.3 Development of supervision capacity at the subnational level – Trainings led by ITECH or by third party with content developed by UCMIT	UCMIT	2023-2025	40,000
6. Integrate the disease surveillance workforce	6.1 Cross-training of TB-Malaria OSEs	UCMIT/DELR	2021-2022	40,000
	6.2 Training malaria workforce and other surveillance staff on existing digital reporting tools	DELR	2021-2022	40,000
	6.3 Malaria surveillance integration with lymphatic filariasis (LF) elimination and other vector-based disease surveillance.	PNCM/UCMIT	2022-2023	TBD
7. Merge pharmaceutical storage facilities and systems	7.1 Organize joint national stakeholders’ consultation meetings to discuss the different models and decide jointly on the short-term plans to strengthen the overall storage and distribution system (public, private, or mixed).	PAHO, Chemonics, PSI/UGP	2021	20,000
	7.2 Create a public private partnership (PPP) to have one logistics operator for the different storage facilities	UGP	2021	TBD
8. TB and malaria microscopy integration	8. 1 Train/maintain a pool of certified technicians for microscopy for malaria and TB at Level 2 labs	UCMIT	2021-2022	TBD
9. Strengthen multi-disease leadership and governance at central and departmental level	9.1 Present a roadmap to develop the organizational structure of the UCMIT for the next five years to the Director General	UCMIT	2021	30,000
10. Promote expanded donor coordination within and across HIV, TB and Malaria	10.1 Create a forum/group on donor health aid integration with appropriate terms of reference (ToRs)	UGP	2021	20,000
	10.2 Create a donor health aid integration Roadmap 2021-25	UGP	2021	40,000
	10.3 Ask the Director General to appoint the GoH representative for this group and schedule regular donor-government meetings	UGP	2021	No cost
	10.4 Create subgroups to address at two additional areas of integration during the next three years	UGP	2021	No cost

11. Use existing results-based financing tools to promote integration in PHC	11.1 Analyze the results of the impact evaluation to decide on the extension of relevant HIV, TB, and malaria indicators	UCMIT (in consultation with UC)	2021	To be financed by USAID
12. Create/expand an integrated package of services for incarcerated populations Use existing results-based financing tools to promote integration in PHC	12.1 Create and deliver an integrated package of services for the incarcerated population	UCMIT	2021	50,000
	12.2 Add malaria to the existing sites providing HIV/TB treatment and increase the scope and coverage of these interventions in other prisons.	UCMIT/PNCM	2022-2023	TBD
13. Reinforce and expand integrated TB-HIV services	13.1 Add TB Tx/Dx services to the HIV clinics	UCMIT/PNLS/PNLT	2021-2023	TBD
	13.2 Map disease prevalence and patient volumes and assess the number of HIV testing and treatment clinics and testing-only HIV clinics that could become HIV-TB diagnostic and treatment clinics.	UCMIT/PNLS/PNLT	2021	40,000
	13.3 Pilot and standardize referral system where HIV and TB services are not provided at the same facility.	UCMIT/PNLS/PNLT	2021-2022	60,000
	13.4 Integrate funding at the same facility offering TB and HIV services, avoiding multiple uncoordinated donor streams.	GF/PEPFAR/UGP	2021	No cost
	13.5 Ensure that TB/HIV staff working at facility levels receive training on both diseases.	UCMIT/Departments	2021	No cost
	13.6 Carry out joint planning for TB and HIV activities in each facility.	UCMIT/PNLS/PNLT/Departments	2021-2022	30,000

## 5. Conclusion

This study is one of the first of its kind to analyze the challenges and opportunities for increased integration among HIV, TB, and malaria programs in Latin America and the Caribbean.

In many countries in the region and around the world, these three infectious disease programs operate largely independently of each other, with little crossover in the areas of staffing, service delivery, information systems, procurement, laboratory services, and so on. They also maintain separate budgets and funding lines. While this confers certain advantages, it also has many drawbacks, including duplication and inefficiency and lack of sustainability.

The analysis of Haiti's HIV, TB, and Malaria programs revealed many of these weaknesses connected with low levels of integration. These are documented in chapters 2 and 3 of the current report.

Chapter 3 also contains a series of 13 areas where there are major opportunities for Haiti to pursue greater integration, with assistance from the Global Fund and other partners. While these emerging recommendations were informed by the existing literature on integration, they respond directly to the current situation and the specific characteristics of Haiti.

Chapter 4 defines a roadmap for implementing the recommended actions in the 13 areas, including the potential incremental costs involved. These 13 blocks of recommendations were included in Haiti's funding request to the Global Fund for the 2021-2023 period, pointing to the fact that there is widespread buy-in to the actions that are proposed.

Among the challenges to promote greater integration are sustained political and technical leadership in the MSPP, effective donor coordination, and efficient and transparent allocation of financial resources. All three factors have been subject to disruption over the past decade, which creates a major risk to the implementation of the HIV, TB, and Malaria integration roadmap in Chapter 4.

Government, donor, and NGOs official interviewed for this project showed a high level of interest in actions to enhance integration of the three diseases among themselves and with the rest of the health system. They recognized the potential benefits from eliminating duplicative activities and from cross-learning. But goodwill in the health sector has often been dashed in Haiti over the past several decades. To counteract this, it will be important to maintain the broad coalition of stakeholders that has been formed to drive improvements in health and disease control integration.

The key limitation of this study was its timing and the consequent inability to conduct a validation workshop (in person or virtually). The study took place between two crises: the political crisis of 2019 when civil unrest prevented early initiation of the work, and the COVID-19 pandemic which broke out in March 2020 just as the main mission was being carried out. Despite the impact that these two crises had on data collection and communications, the project team managed to complete its data collection and to validate all findings and recommendations with the UCMIT Director and the Global Fund, along with other partners. As soon as the COVID-19 situation permits travel to Haiti, the roadmap could be further discussed with key stakeholders. A presentation in French to guide such a validation workshop has been developed by Pharos.

Haiti has already taken some steps toward integration by creating the UCMIT, instituting donor collaboration to strengthen the specimen transport system, and developing a community health worker program that cuts across

the three diseases as well as other areas of primary health care. The Global Fund through the UGP -- the principal recipient of the new RSSH grant -- now has the opportunity to invest in the key recommendations in this report, assisting Haiti in advancing toward greater integration over the next five years.

## 6. Annexes

### Annex A. Documents included in the literature review

Document Name	Description
GF Integration Model	Overview of the GF's approach to integrated healthcare
Integrating HIV TB Malaria into ANC	Summarizes barriers to achieving development goals for HIV, tuberculosis and malaria in sub-Saharan Africa through integrated antenatal care
PEPFAR GF Integration	The experience of Global Fund and PEPFAR joint cascade assessments to harmonize and strengthen key population HIV programmes in eight countries
PQE Initiative	Focus on quality of care for integrated antenatal and postnatal care
MSPP Readiness Thinkwell	Description of Haiti's health system and fragmentation
Cost-Effectiveness of Integrating PMTCT and MNCH Services	LiST model of cost effectiveness of integrating PMTCT and MNCH in several African countries
Haiti_HIS Indicators	Checklist table detailing the functioning of Haiti's HIS
ICCM WHO statement	WHO justification and recommendation for integrated community case management (ICCM)
Integrated HIV malaria diarrhea	Estimates averted deaths and DALYs and cost-effectiveness of combining HIV, malaria, and diarrhea interventions in Kenya
Integration of NTDs	Details successes and failures in NTD program integration in several countries in SSA
Integration-Global-Fund-Shakarishvili	Meeting presentation slides with definitions of integration, health system designs, and integration success examples from the Global Fund
Maputo-Declaration_2008	Recognizes that in order to improve and sustain access to laboratory services, there must be an integration of laboratory support for tuberculosis, malaria and HIV disease programs
NTD integration Stephenson2000	Overview of the use and benefits of integrated control programs for NTDs
PAHO diagnostic integration workshop	The workshop presented recent innovations in diagnostic methods and the delivery of integrated services for tuberculosis, human papillomavirus (HPV), HIV, and other sexually transmitted diseases, as well as viral hepatitis, malaria, and other neglected diseases.
HIS in Mediterranean	Weaknesses of fragmented HIS and benefits of integrated HIS in the Mediterranean
TB-HIV integration SA	Although the identification of HIV-positive women and TB suspects was adequate, implementation of other TB-HIV collaborative activities was sub-optimal

HIV Status UNAIDS	Epidemiological overview of HIV/AIDS in Haiti (2018)
Isoniazid in pregnant HIV pos.	An assessment of the safety, efficacy, and appropriate timing of isoniazid therapy to prevent TB in HIV positive pregnant women (vs. the post-partum period)
Malaria Elimination Haiti 2010-2016	Overview of Haiti's progress towards eliminating Malaria after the 2010 earthquake
Malaria Elimination Haiti	This study aims to build a robust understanding of how-to tailor, implement, and promote malaria implementation strategies in Haiti where "doctors cannot reach".
Sustainability HIV	Implications for the sustainability of the HIV/AIDS response in the Caribbean.
WHO TB Funding Report 2017	WHO funding report for TB related activities (2017)
WHO TB Profile 2017	Epidemiological overview of TB in Haiti (2017)
Haiti WMR profile 2018	WHO World Malaria Report Haiti Country Profile
PAHO TB in the Americas	Epidemiology and trends in TB across the Americas in 2012
HFA Final Report	Health Facility Assessment 2017-2018 (in French)
Key Findings SPA29	Overview of key findings from the Haiti service provision assessment, key variables, and the structure of the Haitian health system
Cartographie prise en charge des RH en santei - Haiti - Global Fund	Partners supported by GF (by project type, zone, amount of funding)
Final HTI-C-PSI_DB IL2 5.20.19	PSI Budget Summary and detailed breakdown for HIV/TB programs
Haiti Global Funds SR and SSR	Sub recipients of Global Fund funding
HTI-C_ConceptNote_0_en 2015.pdf	GF concept note for investing against TB and HIV.
HTI-M_ConceptNote_0_en 2015.pdf	GF concept note for investing against malaria.
HTI-M-PSI_DB revised 15 Oct 2018	PSI Budget Summary and detailed breakdown for Malaria programs
Implementation_Map_HIV_2019update	Implementation map of HIV programs by programs, health products, and funds
Implementation_Map_TB_Final_km	Implementation map of TB programs by programs, health products, and funds
Mark presentation PR	Flow of funding for HIV/TB/Malaria programs
PVVIH VENTILES SEXE ET AGE Au 30Juin2019	Breakdown of PLHIV by age and number of patients receiving ARVs by clinic
Atun Review_2010	A systematic review of the evidence on integration on of targeted health interventions into health system
PATH Framework	Conceptual framework for integration of health services
WHO Systems Thinking for Health System Strengthening	Flagship report with frameworks for system-wide thinking for health system strengthening
CADRE DE REFERENCE POUR L'INTEGRATION DES PROGRAMMES	UCP's conceptual framework for the integration of AIDS/TB/Malaria programs in Haiti
Amendement des normes adultes_7 Juin 2019	National AIDS Program
Atelier_SantéCommunautaire_Conclusions_july2018	Country strategy for multipurpose community health




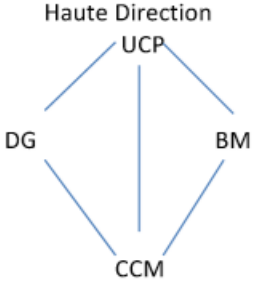
Manuel National de Formation de Pairs Educateurs	Manual for training peer educators
Manuel Normes de Prise en charge finale	Overview of Malaria situation and program in Haiti
PLAN DE TRANSITION DU SNADI 2018-2022	Transition plan for national provisions and distribution
Plan Strategique TB 2015_2019	National TB Strategy
PSNM VIH 2018-2023_JBGS	National Strategy for HIV
Rapport_EMP du PSNEM Haiti_04 octobre 2018	National Strategy for Malaria
Rapport_Final_Directives7_corrections Ministre	National guidelines for improving ART adherence
StrategieCommunautaire_PlanAction_2018	Consensus workshop on community health
TB_Short_Regimen_28.03.18	Letter describing treatment of MDR-TB
Data for Efficiency A Tool for Assessing Health Systems Resource Use Efficiency	The data for efficiency tool outlines key data categories and indicators necessary for assessing efficiency in the use of resource inputs, provides guidance on sources for these data, and calculation of indicators
Handbook for National Quality Policy and Strategy	A handbook outlining the case for developing national strategy and policy on quality of healthcare, the process to do so, and supporting resources
Post-earthquake	Occurs in post-earthquake context. Includes information on cross cutting PH systems strengthening (Lab, Surveillance, Sanitation, etc.) as well as TB and Malaria
Haiti Protests WaPo Oct 2019	News article detailing the political unrest in Haiti and its causes
WHO Assessing the quality of primary care in Haiti	2013 Service Provision Assessment (SPA) results indicating quality and availability of primary care in Haiti in 2013
An Assessment of the Haitian MSPPs Readiness to Establish a Contracting Function	Includes recommendations for establishing contracting function in Haiti
Attrition Option B	An assessment of attrition among pregnant and non-pregnant patients initiating ART following adoption of Option B+ in Haiti.
CDC Profile: Haiti Strategic Focus	Includes CDCs strategic focus and key activities / accomplishments
EMR Sites	An assessment of data quality in multi-site EMR system in Haiti
Haiti and the Dominican Republic	Letter describing PEPFAR planned allocation and strategic direction
Haiti COP 2019	Strategic directional summary of PEPFAR activities in Haiti
Labs Haiti	Evidence from 617 laboratories in 47 countries for SLMTA-driven improvement in quality management systems

## Annex B. Interviews and field visits

Name	Organization
Dr. Lauré Adrien	Director General (MSPP)
Dr. Pavel Desrosiers	UCMIT (MSPP)
Dr. Daess Joelle	PNLS (MSPP)
Dr. Mar Aurele Telfort	PNCM (MSPP)
Dr. Willy Morose	PNLT (MSPP)
Dr. Jean Patrick Alfred	UEP (MSPP)
Dr. Jacques Boncy	LNSP (MSPP)
Dr. Samson Marseille	DELR (MSPP)
Mme. Jisette Letelier	DPM/MT (MSPP)
Dr. Samuel Raymond	UC (MSPP)
Dr. Paule-Andrée Byron	DPEV (MSPP) - EPI
Nika-nola Lamothe	UGP
Harold St. Fort	UGP
Nadege Jolivard	UGP
Paul Auxila	GFF
Eric Gaillard	LFA
Natacha Bobin	OHMASS
Yves-Gerard Pierre Louis	OHMASS
Patrice Joseph	GHESKIO
Dr. Fernet Leandre	PIH
Jean-Aine Pretanvil	PIH
Cate Oswald	PIH
Molly McGovern	PIH
Diane Jean-Francois	CMMB
Fritz Moise	FOSREF
Pierre Despaigne	CDS Country Director
Giulia Perrone	Global Fund
Sylvain Parent	Global Fund
Sunil Arajkumar	World Bank
Nicolas Collit Dit De Montesson	World Bank
Bethany Harberer	USAID
Dr. Olbeg Desinor	USAID
Dr. Elsie Salnave	USAID
Michelle Chang	CDC – Malaria Zero
Dr. Jonas Rigodon	CDC – Malaria Zero
Dr. Patrice Joseph	CDC
Dr- George Perrin	CDC
Maestro Evans	CDC
Sabine Bernard	UN Foundation
Patty Sanchez Bao	UN Foundation
Sharif Egal	CHAI
Abdoulaye Ki	UNAIDS Consultant (Funding Request)
Field visits - First Mission	Les Centres GHESKIO IMIS (Tabarre)
Field visits – Second Mission	<ul style="list-style-type: none"> <li>Hospital La Paix, PAP</li> <li>Service de Santé de Premier Échelon de Saint-Marc (PIH/ZL)</li> <li>Hospital Saint Nicolas, St. Marc (PIH/ZL)</li> </ul>



Annex C. Integration framework UCMIT

TYPE D'INTEGRATION	Niveau d'articulation	FONCTIONS DE GESTION A RENFORCER
Cliniques et (Soins)	<p><u>Echelle intra communale</u> Communautaire (ASCP)</p>  <p>Institutionnel</p>	<ul style="list-style-type: none"> <li>-Prise en Charge</li> <li>-Screening patient (Lab)</li> <li>-Suivi</li> <li>-Rapportage</li> <li>-Tenue dossiers</li> <li>-Coordination</li> <li>-Partage d'informations</li> <li>-Existence/tenue TDB</li> </ul>
Fonctionnelle	<p><u>Echelle intra départementale</u></p>  <p>UAS</p> <p>DDS</p>	<ul style="list-style-type: none"> <li>-Système de référence/contre référence (Dx/Tx)</li> <li>-Validation données</li> <li>-Rapport épidémio.</li> <li>-Rencontre de coordination avec les Réseaux</li> <li>-Supervision</li> </ul>
Normative	<p><u>Echelle centrale départementale</u></p>  <p>DDS</p> <p>PNLS-PNLT-PNCM</p>	<ul style="list-style-type: none"> <li>-Supervision formative</li> <li>-Normes (suivi et mise en œuvre)</li> <li>-Coordination</li> <li>-Evaluation de la performance</li> <li>-Plan suivi/évaluation T/VVIH</li> </ul>
Systémique	<p><u>Echelle Nationale (Intersectorialité)</u></p>  <p>Haute Direction</p> <p>UCP</p> <p>DG</p> <p>BM</p> <p>CCM</p>	<ul style="list-style-type: none"> <li>-Suivi Stratégique : <ul style="list-style-type: none"> <li>- Rencontre de suivi</li> <li>- Tableau de Bord</li> <li>- Bilan semestriel</li> <li>- Evaluation structurelle</li> </ul> </li> <li>Coordination multisecteur</li> <li>Gestion de la coopération</li> </ul>

ANN

## Annex D. Supervision Activities Included in the Funding Request

Area	Activity	3Y-Budget	Observations
Lab Systems	Revision/harmonization of inspection and supervision tools	28,442.02	6 one-day workshops, 20 participants
Lab Systems	CDTs supervision visits by the Departmental level aut	126,000.00	During the supervision visits of the CDTs the Departmental Technologists will be responsible for: distribution of Laboratory diagnostic inputs, collection of slides for quality control, return of Readback results to the providers, on-the-job technical assistance, distribution of panel for External Quality Assessment for GeneXpert... It is a mission with an average of 27 visits per geographical department and per quarter.
Lab Systems	Supervision visits to the Departmental Labs by the Central level authorities	81,312.49	During these missions the LNSP managers will have to: Evaluate the work of the Departmental Technologist, Undertake corrective actions after proofreading, Supervision of Laboratories, Installation and maintenance of Laboratory equipment: Microscopes, GeneXpert devices, No-Contact Systems, Air Conditioners... at the CDTs, regional BSL-2s and Releasing Laboratories. It is a mission of 2 persons during 7 days per Department and per quarter.
TB	120 supervision visits of Departmental Coordinators by the Central level authorities (PNLT)	207,900.00	To ensure the implementation of the action plan.
TB	120 supervision visits of Departmental Coordinators by the Central level authorities (PNLT) - Other costs	74,536.00	To ensure the implementation of the action plan.
Lab Systems	120 supervision visits of CDTs and CTs by the Departmental Coordinators	115,500.00	During the supervision visits of the CDTs the Departmental Technologists will have to ensure: distribution of Laboratory diagnostic inputs, collection of slides for quality control, return of Readback results to providers, Technical Assistance on the job, distribution of panel for External Quality Assessment for GeneXpert... It is a mission with an average of 27 visits per geographical department and per quarter.
Lab Systems	120 supervision visits of CDTs and CTs by the Departmental Coordinators	98,000.20	Same, other costs
Information systems	Quarterly supervision of CDTs by the Central and Departmental levels	43,200.00	Joint missions - central and departmental levels
Information systems	Quarterly supervision of CDTs by the Central and Departmental levels - other costs	19,993.76	Joint missions - central and departmental levels
HRH and community health agents	Training or hiring Auxiliary Nurses in Community Health and supervision	56,700.00	Making 2 sessions, 5 days, 10 departments, 20 participants/ 3 years
HRH and community health agents	Training or hiring Auxiliary Nurses in Community Health and supervision	294,171.49	Making 2 sessions, 5 days, 10 departments, 20 participants/ 3 years
Health products management	Control and formative supervision of 10 CDAI and 200 institutional pharmacies	54,000.00	Public and mixed by DPM/MT (3 persons / 8 visits / 3 days / 10 departments / 3 years)
Health products management	Control and formative supervision of 10 CDAI and 200 institutional pharmacies	21,421.82	Public and mixed by DPM/MT (3 persons / 8 visits / 3 days / 10 departments / 3 years)
Lab Systems	Revision/harmonization of inspection and supervision tools	4,860.00	Need to revise / complement existing tools support the strengthening of the regulation of the system. Animation of a working group of professionals MSPP
Lab Systems	Revision/harmonization of inspection and supervision tools	20,304.99	Need to revise / complement existing tools support the strengthening of the regulation of the system. Animation of a working group of professionals MSPP
HIV-PMTCT	20 visites de supervision per year from the departements to the sites with support from	101,803.83	4 people, 3 days
HIV	8 supervisions per year from the central level to departements/sites	47,156.56	In order to ensure the implementation of the protocols on monitoring the viral load, the toxicity of drugs and IPA
HIV	240 supervision visits from the departements to the institutions, 2 per quarter per departement	66,468.65	In order to ensure the implementation of the protocols on monitoring the viral load, the toxicity of drugs and IPA
TB-HIV	Quartely joint supervision visits from central level, 3 visits per semester (12 visits per year)	50,368.10	Semi mission to supervise the application of standars and quality of care
TB-HIV	Quartely joint supervision visits from the departemental authorities, 2 visits per quarter in the West and Artibonite and one per quarter in the	115,865.04	Semi mission to supervise the application of standars and quality of care

Malaria	Quarterly supervision (evaluation and formative supervision) of competencies of 1033 sanitary institutions (public and private) and the capacities of 500 institutions with labs, in microscopies for	15,484.97	2 visits of 1 week (6 nights) per term (30 IS / quarter) - part 2 + 1 YEAR driver: Every year, each quarter
Malaria	Formative supervision of 4,418 ASCPs each year	317,122.47	Each institution to the Community- ASCP receives 1 visit / T: transport costs to swatch Department of institutions- 1 Mission 5 days / month 1 + 1 program respo driver. Central to the department-1 mission of 5 days / months / d, 3 departments per quarter until 2025- 3 frames + 1 driver
Health products management	Monthly supervision visits from the departments to the IS	3,192.37	12 supervisory visits by months- charges 1000 gdes restauraion for 3 people per CDAI (CDAI No. = 10) -Fuel for vehicle-T1-T4 2022, 2025; 36 institutions visited per month or 432 per year institutions.
Health products management	Supervision to the community offices in the Ouest about commodity management	22,480.36	Supervision trimestielle the central level to the offices * 1 Team 2 personnes (frame 2 and 1 driver) * Mission duration: 5 days per diem (100%) for 5 offices that are far away, 6 days per diem (40% ) for trips to nearby offices 6 * Transportation / Fuel for 11 Debuter offices: Q1 2021 to Q4 / 2025 monthly supervision offices to IS * 1 team 2 personnes (frame 2 and 1 driver) * duration of Mission: 5 days per diem (100%) for the iS are far, 6 days per diem (40%) for trips to nearby iS * Transportation / Fuel for 11 Debuter offices: Q1 2021 to Q4 / 2025
Information systems	Quartely supervision visits to validate information with the case notification in MESI, DHIS2/SISNU, DHIS2-Tracker, from the central level to the departements	9,652.97	4 visits of 5 nights per quarter-frames 3 + 1 driver-Q1 2021-Q4 2025- Fuel-diem for 4 people for 6 days accommodation for 5 nights
Information systems	Weekly supervision visits to validate information with the case notification in MESI, DHIS2/SISNU, DHIS2-Tracker, from OSE to sites	43,379.98	330 visits 1 day per week fee for displacement 320 OSE Q1 2021 up to 2025 Q4.
Information systems	Monthly supervision visits to validate information with the case notification in MESI, DHIS2/SISNU, DHIS2-Tracker, from OSE to AIP	126,196.31	12 visits 1 day- travel costs for OSE 320 to 713 each institutions-year- T2-T4 2021 2025
Information systems	Supervision of teams that visit households	161,451.75	a) 1,000 annuele visits by the team departementale (4 frames + 1 driver) - Joint transportation with service cars - 50% one-day visit and 50% (2 days) visits need lodging b) 10 visits annual 5 days for the central team (part 2 + 1 driver) - Joint transportation and per diem for 5 night visit by Q3 / 2021-Q4 / 2025
Malaria	Quarterly supervision from the central team to the sensibility tests done in the insectarium	50,416	routine visits departements- first team of 3 people per visit- first visit of 3 days per quarter x-diem department for 3 people x5-days lodging for 4 nights per visit- NB: Supervision of sensitivity tests will be done during the routine visits
<b>Total</b>		<b>2,377,382.56</b>	

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