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# LABORATORY EVALUATION REPORT

## Evaluation Report of 44 Laboratories Santé pour le Développement et la Stabilité d'Haïti (SDSH)

### Laboratory Evaluation Report

This publication was produced by Management Sciences for Health for review by the United States Agency for International Development. The views expressed herein do not necessarily reflect the views of USAID or those of the United States Government.

**Laboratory Evaluation Report  
Produced May 17, 2013**

**Santé pour le Développement et la Stabilité d'Haïti (SDSH)**

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# CONTENTS

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<b>ACRONYMS .....</b>	<b>4</b>
<b>ABSTRACT .....</b>	<b>5</b>
<b>I. Context and justification.....</b>	<b>6</b>
1. Health sector situation in Haiti .....	6
2. National Policy on Medical Laboratories .....	7
3. SDSH mission and objectives .....	8
<b>II. Study Objectives.....</b>	<b>9</b>
1. Main objective.....	9
2. Specific objectives.....	9
<b>III. Method .....</b>	<b>9</b>
1. Type of study .....	9
2. Dates of study.....	9
3. Variables of study .....	10
4. Category of persons interviewed .....	13
5. Sampling of the sites.....	13
<b>IV. Data collection process.....</b>	<b>15</b>
1. Constraints .....	15
• Logistics.....	15
• Climatic conditions.....	15
• Limited period of time .....	15
• Insecurity.....	15
• Political instability and economic context .....	15
2. Data collecting tool .....	15
3. Limitations of the evaluation.....	16
• Bias of sites selection .....	16
• Bias of measure.....	16
• Bias of language .....	16
• Bias of prevarication .....	16

• Inspectors.....	16
• Epi Info record operators.....	17
<b>4. Data collection process .....</b>	<b>17</b>
• Workshop.....	17
• Follow-up of site visits .....	17
<b>V. Data recording process .....</b>	<b>18</b>
<b>VI. Results .....</b>	<b>18</b>
<b>1. Description .....</b>	<b>18</b>
• Personnel .....	18
• Organization.....	22
• Equipment.....	25
• Facilities & safety .....	26
<b>2. Analysis .....</b>	<b>37</b>
<b>VII. Discussion .....</b>	<b>48</b>
<b>VIII. Appendix.....</b>	<b>50</b>
<b>1. Appendix no 1: List of the 44 sites included in the evaluation.....</b>	<b>50</b>
<b>2. Appendix no 2: Questionnaire used for the interviews .....</b>	<b>53</b>
<b>3. Appendix no 3: Print screens of the Epi Info 7 form designer .....</b>	<b>63</b>

## ACRONYMS

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**AIDS:** acquired immunodeficiency syndrome  
**ARV:** antiretroviral  
**CLSI:** Clinical and Laboratory Standards Institute  
**EQA:** external quality assessment  
**GBEA :** guide de bonne exécution des analyses  
**GPL:** good practices for laboratories  
**HIV:** human immunodeficiency virus  
**ISO:** International Organization for Standardization  
**LNSP:** Laboratoire National de Santé Publique  
**LQMS:** Laboratory Quality Management System  
**MNCH:** maternal and neonatal child health  
**MSH:** Management Sciences for Health  
**MSPP:** Ministère de la Santé Publique et de la Population  
**SDSH:** Santé pour le Développement et la Stabilité d’Haïti  
**SOP:** standard operating procedure  
**TB:** tuberculosis  
**TDC:** treatment and diagnosis center  
**UCL:** Unité de Coordination et de Logistique  
**VCT:** Volunteer Counseling and Testing  
**WHO:** World Health Organization

## ABSTRACT

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In the face of widespread poverty, social and political unrest, and recent natural disasters (hurricanes, flooding, and the devastating 2010 earthquake, among others), Haiti's fragile population is further burdened by a deprived public health system, which receives only 5.8 percent of Haiti's national budget.<sup>1</sup> Lacking financial resources and skilled health personnel, the country's public health system also faces a high prevalence of infectious diseases and infections including HIV & AIDS, tuberculosis, cholera, and malaria.

To address the challenges facing Haiti's public health system, many local and international organizations are working in collaboration with the Ministry of Health (MSPP - Ministère de la Santé Publique et de la Population) to improve the delivery of direct medical services. Despite these efforts, however, the improvement and scale-up of laboratory services has been largely neglected. The National Policy on Medical Laboratories remains weak and national standards are not widely available, complicating assessments of medical laboratories at health facilities. While the recently constructed National Laboratory of Public Health (LNSP - Laboratoire National de Santé Publique) is progressively leading efforts to improve laboratory services, much remains to be done to ensure laboratory regulations are followed by healthcare personnel, including laboratory technicians.

SDSH's HIV/TB team conducted an evaluation of tuberculosis (TB) services offered at 54 sites. During these site visits the SDSH team also conducted laboratory evaluations at 40 of the 54 sites as well as at an additional four sites (though a TB evaluation had not been conducted in those 4 sites). SDSH chose these sites based on the proximity between sites (and corresponding travel time) and staff availability. Seventeen inspectors conducted the evaluations using a questionnaire of 55 questions designed to identify areas of improvement as per WHO's Lab Quality Management System tool kit. This tool kit defines 12 building blocks focused on improving overall lab quality, of which four have been taken into consideration in this evaluation, including "Personnel," "Organization," "Equipment," "Facility & Safety." SDSH staff used Epi Info 7 software to conduct the statistical analysis, which included 176 variables. Staff performed the analysis using only relevant data (since some variables were only relevant to the supervision activities of the Lab Program Manager).

The evaluation highlighted eight positive elements related to "personnel" (1), "organization" (3) and "facility & safety" (4). There were 36 recommendations on "Personnel" (7), "Organization" (7), "Equipment" (4), and "Facility & Safety" (18). Some recommendations should be followed by discussions with the concerned partners whereas others should be discussed and sorted out internally by the Lab Program Manager. Furthermore, this evaluation presented an opportunity to highlight the need for clarifications on the role of partners (PNLT, LNSP, etc.).

Contributing to these results, new lab supervision tools will be designed by the Lab Program Manager and will be available to assist the Departmental Technical Advisers of SDSH / MSH to directly support the health facilities. These tools should allow the monitoring of quality improvement through a score system. Also, a second lab evaluation should be performed in March 2013 to compare with the current results to assess quality improvement.

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<sup>1</sup> WHO/HSE/GAR/DCE/2010.1

## I. Context and justification

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### 1. Health Sector Overview in Haiti

With an average per capita income of \$431 per year, Haiti is considered one of the poorest countries in the Western Hemisphere. An estimated 55 percent of the country's nine million people live on less than one dollar a day and 78 percent of the population lives in conditions of extreme poverty and malnutrition.<sup>2</sup> Adding to the detriment of these conditions was the January 2010 earthquake in which more than 200,000 people died and an additional 300,000 were injured. More than 250,000 homes were leveled, causing over one million people to move to temporary Internally Displaced Persons (IDP) camps, often referred to as "tent cities."

In the face of this catastrophic event, the Government of Haiti (GOH), in partnership with foreign governments and non-governmental organizations, have committed and invested substantial resources to improve Haiti's public health system. The following public health sector challenges were identified as a starting point for these efforts:

- According to the MSPP, only 47 percent of the population has access to the minimum package of basic health services which the GOH has committed to provide.<sup>3</sup>
- The overall health system is extremely weak. The GOH spends only 5.8 percent of its national budget on public health, of which 90 percent supports personnel costs. There is a shortage of health workers, low retention rate of nurses and doctors, and low skill level and knowledge base at all levels of the health system. Furthermore, there are multiple medical commodity procurement and distribution systems to ensure the supply of commodities for the health activities that donors support.
- Social and community mobilization to encourage healthy behavior and seek services is weak largely due to socio-cultural barriers, low Government investment, limited data to inform promotion strategies, and poor empowerment of individuals and communities.
- The health outcomes over the last decade lag far behind the Millennium Development Goals (MDGs) and the national objectives. Although Haiti's infant mortality rate has improved over the last 15 years from 80 to 57 per 1,000 children, it remains very high compared to other countries in the Americas region. Six hundred thirty (630) out of 100,000 women die while giving birth and only 25 percent of women deliver in a health facility. With an HIV prevalence rate of 2.2 percent, Haiti's estimated 150,000 HIV positive individuals constitute the greatest burden of HIV & AIDS care and treatment responsibility in the Caribbean region. According to the MSPP 50 percent of HIV infected individuals in need of treatment are currently receiving it. TB incidence, 132 cases for 100,000 inhabitants, is the highest in the Americas region. About 60 percent of expected cases are detected and 60 percent of TB patients are tested for HIV<sup>3</sup>.

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<sup>2</sup> UNDP. Haiti Report 2011

<sup>3</sup> WHO. 2010

The earthquake and the subsequent cholera outbreak have added a new dimension of challenges to the health system in Haiti by increasing demand for basic services, creating new demand for specialized post-disaster services, destroying health infrastructure, and increasing the presence of organizations working in the health sector.

## **2. The National Policy for Medical Laboratories in Haiti**

The National Policy on Medical Laboratories remains weak despite recent efforts and investments to improve laboratory services, including the 2006 construction of the state-of-the-art National Laboratories office and the guidelines for Good Practices in Laboratories (GPL) which is under review and should be available in 2013. This document should include the minimal requirements to be considered as a medical laboratory, additional details about norms for high level laboratories, and the different Standard Operating Procedures (SOPs) for all services and techniques.

The role of LNSP is still unclear to many medical directors and health providers; however, the following responses were provided during interviews led by the Lab program manager and different employees of LNSP:

- Design and update guidelines and norms based on international documents of reference;
- Train lab technicians from all departments on specific techniques and with a specific annual training plan shared with organizations and partners;
- Provide direct technical supervision of health facilities at the departmental level via the Departmental Technologists (employees of LNSP based in the 10 departments);
- Lead a national External Quality Assessment program (EQA) for laboratory testing of HIV, syphilis, CD4, TB, malaria, and other upcoming lab techniques;
- Lead the implementation and spread of the national network of transport for CD4 samples through the UCL division (Unité de Coordination Logistique);
- Provide technical assistance for biomedical equipment;
- Regularly evaluate labs in-country;
- Lead several research studies on cholera, HIV, etc. with different international partners.

The mission of LNSP is also constantly evolving. In this context, it was necessary to conduct an evaluation of the labs in order to identify areas where sites need support in order to align with the norms and to ensure quality improvement.

WHO has developed a specific tool for labs seeking ISO or CLSI accreditation, referred to as the Laboratory Quality Management System (LQMS) training tool kit, available on the WHO website.<sup>4</sup> This LQMS tool describes the different requirements for ISO or CLSI accreditations. In the Haitian context, the objective of SDSH is to improve lab services quality according to international standards. This WHO tool provides relevant information on what can be done in optimal contexts and where the attention should be focused for improvement. Twelve “building blocks” (shown in the figure no.1) are defined by WHO as all integral components of a functioning medical laboratory.

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<sup>3</sup> Webpage of the WHO Laboratory Quality Management System (LQMS) training tool kit:  
[http://www.who.int/ihr/training/laboratory\\_quality/information/en/index.html](http://www.who.int/ihr/training/laboratory_quality/information/en/index.html)



**Figure 1: The 12 building Blocks Defined by WHO in the Lab Quality Management System Tool Kit**

### **3. Santé pour le Développement et la Stabilité d’Haïti (SDSH)**

SDSH<sup>5</sup> is working to provide high-impact and quality health and social services to 4.3 million Haitians throughout Haiti’s 10 administrative departments. Recognizing the challenges facing Haiti’s fragile population and its deprived health system, SDSH is building local capacity and ensuring the delivery of essential health services. Since 2007, SDSH has supported 163 health care facilities (64 NGO-supported sites and 99 Public sites) through performance-based contracts – an effective way of reinforcing innovation, accountability, and incentivizing healthcare personnel.

Recognizing that a healthy population directly contributes to Haiti’s stability, economic growth, and democracy, USAID and the Government of Haiti (GOH) launched SDSH (2007-2013) with the following objectives: (1) To improve the access and quality of high impact interventions based on a package of primary services defined by the Government of Haiti (GOH); (2) To strengthen the Ministry of Health’s (MSPP) capacity to manage and monitor decentralized health services at the Departmental level. These objectives are to be achieved through the delivery of a basic package of primary healthcare services (PMS/PSPI) as defined by the Government of Haiti (GOH) which includes four program elements:

- 1) HIV & AIDS;
- 2) Tuberculosis (TB);

<sup>5</sup> USAID awarded Management Sciences for Health (MSH) the Santé pour le Développement et la Stabilité d’Haïti (SDSH) Project in August 2012, following the success of SDSH – Pwojè Djanm (2007-2012)

- 3) Maternal and Child Health (MCH) (including Water, Sanitation and Hygiene [WASH] and Nutrition);
- 4) Family Planning (FP).

In addition, targeted health systems strengthening (HSS) assistance will increase the capacity (financial, information, and governance) of Departmental Ministry of Health personnel to manage service delivery as it is currently organized as well as through newly organized and supported referral networks. Departmental level health referral network systems will be strengthened to ensure public sector management and accountability of those services while achieving reductions in maternal, newborn, and child morbidity and mortality.

This work will build on previous USAID/Haiti investments and link to current and future activities in health to support decentralization strengthen public sector capacity in managing and contracting service delivery and support NGO service delivery.

## **II. Study Objectives**

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### **1. Main objective**

The main objective of this evaluation was to conduct a situational analysis and needs assessment of SDSH-supported laboratories.

### **2. Specific objectives**

The secondary objectives of this evaluation are the following:

- 2.1. To create a database of 44 SDSH-supported laboratories, including their respective services and capacity.
- 2.2. To identify areas of improvement for the quality of laboratory services offered to the population.
  - Identification of sites needing training for specific lab techniques
  - Identification of areas of improvement in order to follow national Lab policies with a strong focus on ARV and Center of Diagnosis and Treatment of TB sites
  - Identification of areas of improvement for medical waste management from the lab
  - Identification of issues faces by lab personnel to help decision making on new actions to be implemented

## **III. Method**

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### **1. Type of study**

This lab evaluation is a descriptive study of the lab services offered in some health facilities within the MSH network.

### **2. Dates of study**

SDSH conducted this evaluation between October 2 and November 7, 2012.

### 3. Variables of study

A total number of 172 variables have been defined for this evaluation resulting from a total of 55 questions asked during the interviews. For some specific questions, it was necessary to define an answer as a variable since the Epi Info 7 software does not allow the analysis of multiple choices question ("Checkbox" chosen on Epi Info 7) as answers can vary from one site to another. For example: *What protection equipment is available to staff in charge of cleaning the laboratory?*

- Gloves
- Lab jackets
- Closed shoes
- Etc.

Some variables were only used for the purpose of creating the database whereas others were used for the purpose of the evaluation aimed to identify areas of improvement for lab services quality. The definition of variables has been chosen in order to collect different categories of data belonging to four of the 12 WHO building blocks such as the following (see figure no.2):

- **Personnel:**
  - o Human Resources data
  - o Training needs
  - o Attitude of personnel
- **Organization**
- **Equipment**
- **Facilities and safety**
  - o Facility
  - o Protection equipment
  - o Lab waste management
    - ✓ Dustbins
    - ✓ Cleaning of the lab
    - ✓ Elimination of waste



**Figure 2: Selected Building Blocks Included in the Lab Evaluation**

It was impossible to define the variables and design the data collection tool according to the latest LNSP guidelines since this document is still under revision. However, the last version of the Good Practices for Laboratories developed by LNSP (version September, 1, 2012) was made available and SDSH used this document to help define several variables as well as some recommendations mentioned in the WHO LQMS tool kit.

The breakdown of questions and variables is shown in Table #1 and the respective percentage is illustrated in the Figure no.3. The list of variables is detailed in Table #2.

**Table 1: Breakdown of Numbers of Questions and Variables According to Topics**

Category	Sub category (when applicable)	Number of questions	Number of variables
Personnel	Human Resources data	3	23
Personnel	Training needs	1	11
Personnel	Attitude of personnel	4	7
Facility & Safety	Facility	7	7
Facility & Safety	Protection equipment	7	13
Facility & Safety	Lab waste management	12	24
Organization	<i>Not applicable</i>	8	49
Equipment	<i>Not applicable</i>	7	42
<b>TOTAL</b>		<b>49</b>	<b>176</b>

**Figure 3: Summary of Questions According to Topics**



**Table 2: List of Questions Defined for the Evaluation**

ORGANIZATION (8 questions)		Subcategory (when applicable)
1	Tick the tests being performed at the site among the following list	NA
2	For the Determine HIV test, precise the technique of blood collection used	NA
3	For the syphilis test, precise the technique of blood collection used	NA
4	Tick the other tests being performed at the site	NA

5	Presence of a head of laboratory	NA
6	Tick the tests for which you had at least 3 stock outs between January 2012 and June 2012	NA
7	Use of one main lab register	NA
8	Total number of registers	NA
<b>EQUIPMENT (7 questions)</b>		
1	Presence of a Sysmex machine	NA
2	Presence of a Reflotron machine	NA
3	Presence of a centrifuge machine for blood tubes	NA
4	Presence of a centrifuge machine for hematocrit capillaries	NA
5	Presence of a Bunsen burner or alcohol lamp for TB sputum technique	NA
6	Number of available equipments in the lab among the following list	NA
7	Number of available and functional equipments in the lab among the following list	NA
<b>FACILITY &amp; SAFETY (26 questions)</b>		
1	Availability of disposable gloves	Protection equipment
2	Availability of lab jackets	Protection equipment
3	Availability of FFP2 respiratory masks	Protection equipment
4	Lab personnel wear FFP2 respiratory masks while performing the Tb smear	Protection equipment
5	Material of the bench	Facility
6	Availability of water	Facility
7	Availability of power	Facility
8	Presence of an isolated samples collecting room	Facility
9	Surface of the lab	Facility
10	Presence of a specific TB lab	Facility
11	Availability of specific dustbin for TB contaminated waste with cover and pedal	Lab waste management
12	Availability of specific dustbin for contaminated waste with cover and pedal	Lab waste management
13	Identification of the dustbin for contaminated waste	Lab waste management
14	Identification of the dustbin for non-contaminated waste	Lab waste management
15	Availability of biosecurity boxes for needles	Lab waste management
16	Cleaning of the lab	Lab waste management
17	Persons in charge of cleaning the lab	Lab waste management
18	Cleaning products for the lab	Lab waste management
19	Training on contaminated waste manipulation for persons in charge of cleaning the lab	Lab waste management
20	Protection equipment for persons cleaning the lab	Protection equipment
21	Specific color for contaminated dust bin plastic bags	Lab waste management
22	Sharp and cutting materials are thrown in biosafety boxes	Lab waste management
23	Decontamination of some products prior to elimination	Lab waste management
24	Method for lab waste destruction	Lab waste management
25	Lab personnel wear lab jackets	Protection equipment
26	Lab personnel wear gloves	Protection equipment
<b>PERSONNEL (10 questions)</b>		
1	Name, phone and mail of Head of Lab	Human Resources data
2	Name, phone and mail of Lab technicians	Human Resources data

3	Name, phone and mail of Bacilloscopists	Human Resources data
4	Number of lab technicians	Human Resources data
5	Number of Bacilloscopists	Human Resources data
6	Number of persons with an urgent need for refresher trainings for specific tests	Training
7	Lab technicians eating or smoking in the lab	Attitude of personnel
8	Presence of non-authorized people in the lab	Attitude of personnel
9	Presence of food in the fridge	Attitude of personnel
10	Presence of several patients at the same time in the sample collecting room	Attitude of personnel

#### 4. Category of persons interviewed

SDSH staff interviewed the heads of the laboratory and/or the lab technicians depending on the availability of the personnel and their interest in participating in the evaluation.

#### 5. Sampling of the sites

This TB evaluation included all Treatment and Diagnostic Centers (TDC) for TB within the SDSH network (a total of 54 sites throughout the country) and lasted for the month of October 2012. Due to poor road conditions and other logistical constraints (e.g. flooding, mechanical difficulties, etc.) the SDSH HIV team decided to collect laboratory data as well in addition to conducting the evaluation.

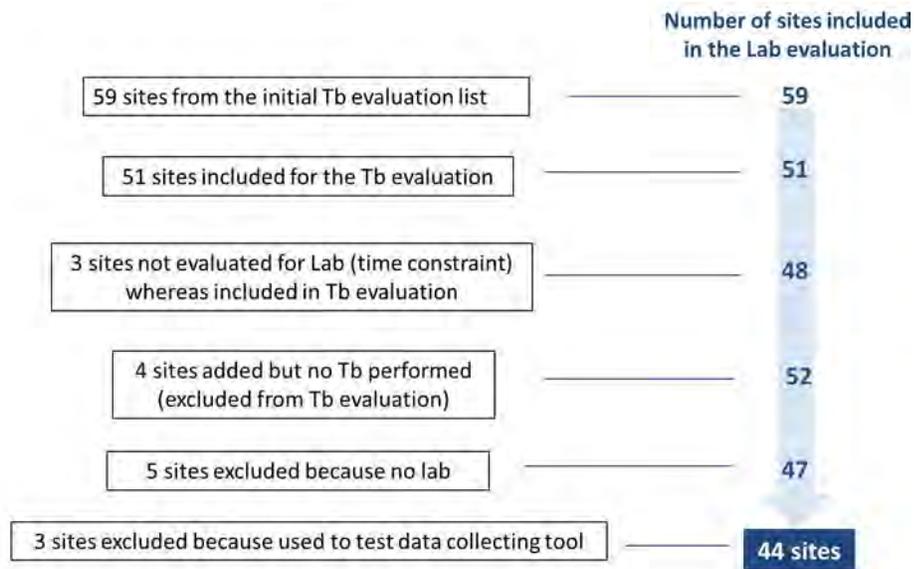
The selected sites included in this laboratory evaluation are based on convenience sampling and the site visits performed for the TB evaluation by inspectors to TDC. However, for some sites, inspectors discovered while performing the TB evaluation that the site was not offering TB services. In those particular cases, the inspector took the opportunity to conduct the lab evaluation. Therefore, some sites are shown as not offering TB services.

The total number of sites including in the lab evaluation is 44 (see Appendix no 1, *List of the 44 sites included in the evaluation*). This lower number than the number of TB sites is due to the priority given to the TB evaluation. It has happened that due to constraints, inspectors could only visit for a short period of time which was not long enough to conduct the lab evaluation.

A total of **17 sites out of the 60** from the initial TB evaluation list have been excluded from the evaluation for the following reasons as illustrated in the figure no. 4

- **Two sites** have been excluded from the TB evaluation because TB services are handled by another organization. Therefore, there were 54 total sites included in the evaluation instead of 60. However, for three sites, where TB is handled by other organizations, SDSH staff did visit the sites and conducted the lab evaluation.
- Out of those 57 sites from this new list, **six sites** could not be visited by inspectors for various reasons:
  - o The medical director of one site had been kidnapped;
  - o Five sites were inaccessible because of weather disruptions (e.g. Hurricane *Sandy*)
- **Five sites** have been excluded because there was no laboratory. Only Voluntary Counseling and Testing (VCT) is offered, which is typically managed by nurses and/or health auxiliary staff.
- **Three sites** have been excluded because those sites have been chosen to test the data collection tool.

1.3.



**Figure 4: Site selection process for the 44 sites included in the lab evaluation**

The 44 sites are broken down by Department:

**Table 3: Breakdown of the sites included in the evaluation**

Department	Number of sites included in the evaluation
Artibonite	7
Centre	5
Grande Anse	4
Nippes	3
Nord	7
Nord Est	6
Nord Ouest	2
Ouest	5
Sud	5
Sud est	0
<b>TOTAL</b>	<b>44</b>

## IV. Data collection process

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### 1. Constraints

- **Logistics**

The SDSH project works in all 10 Departments and some sites are located in very remote areas. For many sites, one full day is required to be able to access the site and return before the night. In many instances, it was impossible to conduct two site visits per day, depending on the location.

- **Climatic conditions**

The evaluation has been conducted during the hurricane season. A hurricane, named Sandy, hit Haiti between October 24 and October 26 which triggered to sites visits cancellation. The hurricane was followed by rains and provoked flooding in some parts of the country leaving some sites inaccessible for few days which complicated the evaluation performance.

- **Limited period of time**

SDSH staff spent 23 working days conducting the laboratory evaluations at 44 sites.

- **Insecurity**

There are frequent security issues in Haiti, especially in Port-au-Prince. Therefore, several sites have been excluded from the Port-au-Prince region. Security issues also impacted various site visits, as some medical personal as well as inspectors had to leave their respective health sites at 3p.m. to avoid security risks late at night on the roads.

- **Political instability and economic context**

Due to recent political changes and economic issues, there were instances of demonstrations in the streets which led to inaccessibility of sites.

### 2. Data collecting tool

Due to the very short time period dedicated to finalize the data collection tool, it is likely that some questions might have needed to be rephrased in order to reduce the risk of misinterpretation.

It would have been ideal to design according to the national norms defined by the National Laboratory of Public Health LNSP. However the guideline including the norms is still in the process of being finalized by the LNSP. Nevertheless it was possible to get the old version of the Good Practices for Laboratory (GPL) from LNSP and get some SOPs which were not updated. Only some information has been taken into consideration while designing the data collecting tool due to the limited period of time to design the lab evaluation data collecting tool and due to the fact that it was not updated.

The language used for the questionnaire is French (see Appendix no 2: *Questionnaire used for the interviews*).

The data collecting tool has been designed in order to record data on the free CDC adapted WHO developed statistical software Epi Info version 7 (see Appendix no 3, *Print screens of the Epi Info 7 form designer*).

The data collecting tool has been tested on three sites to ensure the relevance of the questions.

The Epi Info form designer for the Lab evaluation was designed by the Lab Program Manager assisted by Dr Durena, head of Decentralization and Departmental Assistance Unit. The form designer includes also data on HIV and waste management since two additional evaluations were conducted on those topics at the same time to benefit from the sites travel. However, data concerning lab are on specific pages named “RH Lab”, “SERVICES LAB”, “EQUIP1 LAB”, “EQUIP2 LAB”, “GDD LAB”, “ATTITUDE LAB”.

The Epi Info form designer for the lab evaluation has been tested before starting the recording process.

### **3. Limitations of the evaluation**

- **Bias of sites selection**

The selected sites were not chosen based on criteria but rather based on opportunities for inspectors to visit. Therefore, the sample of sites included in the evaluation is not representative of all the laboratories belonging to the MSH network.

It is important to mention that labs within the MSH network are similar in terms of size, human resources, and services offered.

- **Bias of measure**

Some of the questions have been formulated in a way that personal interpretation may interfere and influence the answer.

- **Bias of language**

The language for the questionnaire is French; however, some people are not comfortable understanding or speaking. Therefore translation into Haitian Creole was required for some sites.

- **Reporting Bias**

The data result from interviews with the exception of data concerning the attitude of the lab personal which are from inspectors’ observations.

For some data, the information was provided by lab personal and may not reflect the reality. For example, we can expect people to complain of not having enough lab materials whereas no stock outs occurred and the available stock is sufficient for the tests volume of the lab.

- **Inspectors**

- **Number of inspectors**

Because of the high number of sites, the short period for the evaluation, and logistical constraints, a several inspectors participated in the study. A total of 17 inspectors conducted the evaluations.

- **Category of inspectors**

There were three categories of inspectors which may have resulted in a bias of the data collection based on their technical knowledge:

- **Departmental Technologist:** national employees from the LNSP; considered technical personnel. Departmental Technologists previously served as lab technicians before and have a high level of technical lab knowledge and understanding. Each department has one or two Departmental Technologists based on the size of the Department.

- **Department Technical Adviser (MSH/CTD):** SDSH/MSH employees based in the departments and are responsible for the follow-up of all SDSH/MSH activities. Their lab technical understanding is low and they do not have a background in labs. Each department has one DTA (CTD).
- **The SDSH/MSH HIV/TB team:** MSH employees based at the central level. None have a lab background except for the Lab Program Manager who conducted only one evaluation for the Hospital Fort St Michel in Cap Haitian. Therefore their combined lab technical understanding is limited. The total number of persons for the HIV/TB team who led lab evaluation is four, including the Lab Program Manager.

The inspector category for conducting the lab evaluation was assigned only according to the opportunity of the site visit and not based on specific criteria.

- **Epi Info Record Operators**

Two persons recorded the data on Epi Info: an MSH assistant and the Lab program manager. There are likely some gaps between the data written on the questionnaire and the data recorded (due to personal interpretation of the answer by the operator).

Example: *Number of available equipment.* Some people have opted for the available equipment in the lab instead of putting a number.

#### 4. Data collection process

- **Workshop**

A workshop was organized on September, 27, 2012, at the MSH central office in Port-au-Prince to gather the different categories of people who conducted the lab evaluations (see table #4):

**Table 4: Table of Participants at the Workshop**

	Department									Total
	Artibonite	Centre	Grande Anse	Nippes	Nord	Nord Est	Nord Ouest	Ouest	Sud	
Departmental Technologist	1	1		1	1	2	1	2	0	9
Department Technical Adviser	1	1	1	1	1	1	1	1	1	9
The HIV/TB team of SDSH/MSH	NA	NA	NA	NA	NA	NA	NA	NA	NA	5
										23

During this workshop, SDSH staff emphasized the TB evaluation but explained that it would be very to conduct lab evaluations in parallel with the TB evaluation. Participants planned a series of sites visit to ensure that all sites were evaluated during the time period.

- **Follow-Up of Site Visits**

Regular follow-ups of the sites visit were conducted by the Lab Program Manager by e-mail and by phone. Regular updates on the number of evaluated sites were communicated to the HIV/TB team by the Lab Program Manager.

## V. Data recording process

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The questionnaires were collected in hard copy or electronically. Two persons recorded the data on Epi Info: an MSH assistant and the Lab Program Manager. Unfortunately, due to time constraints, it was not possible to conduct an ultimate check of the data recorded versus data collected before starting the analysis. Therefore there might be some discrepancies between data collected and data recorded.

## VI. Results

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### 1. Description

As described in Section III, 55 questions have been divided according to four topics belonging to the 12 building blocks defined in the WHO LQMS:

- Personnel
- Organization
- Equipment
- Facility & Safety

The data collected for the database creation will not be described nor analyzed. The focus in this section is mainly on data aimed to identify areas of improvement leading to the definition of actions to strengthen the quality of the lab services offered in the health facilities of MSH network.

Due to the high number of variables, it is not possible to describe all the results per variable. Therefore only relevant data will be described according to the HIV/Tb team's appreciation. Besides, specific comments will be added when appropriate to justify the purpose of the question.

The "total number of observations" in the tables corresponds to the total number of sites having responded. This means that when this total number is less than 44, some sites did not reply to the question which is missing.

- **Personnel**

As described in Section III paragraph three, this category has been split into three main topics:

- Human resources data
- Training needs
- Attitude of lab personnel

For the human resources data, some of the data have been recorded only for the purpose of the database creation such as name, phone number, etc.

- **Human resources data**

**Table 5: Human Resources Availability Analysis Data**

<b>Question : Number of personnel available at the site</b>	<b>Total number of observations</b>	<b>Total number of lab technicians</b>	<b>Average number of personnel per site</b>	<b>Total number of sites with only 1 lab tech</b>	<b>Frequency of sites with only 1 lab tech percent</b>
Lab technicians	44	120	2.72	17	38.63

The 44 sites have a total of 120 lab technicians; however, there is only one lab personnel (on average) for nearly 40 percent of the sites.

**Table 6: Availability of Bascilloscopists**

<b>Question : Number of personnel available at the site</b>	<b>Total number of observations</b>	<b>Total number of lab technicians</b>	<b>Average number of personnel per site</b>
Bacilloscopists	42	41	<b>0.97</b>

Out of the 42 sites which responded, there are fewer than one lab personnel referred to as a bacilloscopist<sup>6</sup> per site.

**- Training needs**

**Table 7: Trainings Needs for Lab Technicians**

<i>SDSH Program</i>	<b>Question: Number of personnel with an urgent need for refresher training for the technique</b>	<b>Total number of observations</b>	<b>Total number of personnel needing a training</b>	<b>Average number of personnel needing a training per site</b>	<b>Number of observations n (Yes, urgent need for refresher training)</b>	<b>Frequency of sites with personnel with urgent need for refresher training percent</b>
<i>VIH</i>	VIH	44	57	1.29	25	<b>56.82</b>
<i>VIH</i>	Syphilis	44	70	1.59	29	<b>65.91</b>
<i>Tb</i>	TB sputum	43	81	1.88	32	<b>74.42</b>
<i>SDSH Program</i>	<b>Question: Number of personnel with an urgent need for refresher training for the technique</b>	<b>Total number of observations</b>	<b>Total number of personnel needing a training</b>	<b>Average number of personnel needing a training per site</b>	<b>Number of observations n (Yes, urgent need for refresher training)</b>	<b>Frequency of sites with personnel with urgent need for refresher training percent</b>
<i>Tb</i>	PPD	44	95	2.15	34	<b>77.27</b>
<i>HIV, MNCH</i>	Malaria smear	43	78	1.8	31	<b>72.09</b>
<i>MNCH</i>	Stools	43	90	2.09	32	<b>74.42</b>
<i>MNCH</i>	Vaginal discharge	43	85	1.97	30	<b>69.77</b>
<i>MNCH</i>	Sickling test	43	64	1.48	21	<b>48.84</b>

<sup>6</sup> Bacilloscopist: a person who has been trained only for the purpose of performing the TB sputum technique and who has not received the initial training of lab technician. This category of personnel has been created in Haiti to reply to an urgent need in Haiti for personnel performing TB microscopy diagnosis. This means that this category of personnel is less qualified than the other lab technicians and cannot perform other techniques in the laboratory.

<i>MNCH</i>	Blood group	43	48	1.11	18	<b>41.86</b>
<i>MNCH</i>	Typhoid fever	43	61	1.42	24	<b>55.81</b>
<i>HIV</i>	CD4 manual	43	78	1.81	27	<b>62.79</b>

This table shows that more than a half of the 44 sites expressed needing urgent refresher training for their personnel for almost all of the techniques listed above. Those techniques have been specifically selected because some are linked to HIV, some to TB and some to Maternal and Child Health (MNCH) as specified in the first column.

#### - Attitude of Personnel

The questions belonging to this section named “Attitude of personnel” result from the inspectors’ observations and not from questions being asked.

**Table 8: Good Practices in the Lab (1/3)**

<b>Question: Personnel smoking or eating in the lab</b>	<b>Total number of observations</b>	<b>Number of observations n (Yes)</b>	<b>Frequency of sites (yes) percent</b>
Personnel eating in the lab	39	5	<b>12.82</b>
Personnel smoking in the lab	39	1	<b>2.56</b>

It is strictly forbidden to smoke or eat in the lab according to WHO recommendations.<sup>7</sup> Out of the 39 sites included in the evaluation, the inspectors declared having witnessed at least one lab personnel eating in the lab in almost 13 percent of those sites. One lab personnel was seen smoking in the lab.

As mentioned above, it is strictly forbidden to eat in the lab. Therefore it is also forbidden to keep some food in the fridge of the lab.

**Table 9: Good Practices in the Lab (2/3)**

<b>Question: Presence of food in the fridge of the lab</b>	<b>Total number of observations</b>	<b>Number of observations n (Yes, presence of food in the fridge)</b>	<b>Frequency of sites with food in the fridge percent</b>	<b>Number of observations of sites without a fridge n</b>	<b>Frequency of sites without a fridge percent</b>
Food in the fridge of the lab	42	2	<b>4.76</b>	18	<b>42.86</b>

<sup>7</sup> and <sup>5</sup> Source : World Health Organization. Laboratory biosafety manual, 3rd edition. Geneva: World, Health Organization; 2004;p 11 and p10 [Consulted on December, 12, 2012]: [http://www.who.int/csr/resources/publications/biosafety/WHO\\_CDS\\_CSR\\_LYO\\_2004\\_11/en/](http://www.who.int/csr/resources/publications/biosafety/WHO_CDS_CSR_LYO_2004_11/en/)

Out of 42 sites, there are two sites where food is kept in the fridge; however 42.86 percent did not have food in their fridges.

According to WHO recommendations<sup>8</sup> and for safety reasons, only authorized persons (lab team and medical team from the site) can be present in the lab. Patients are only allowed to be in the waiting room and in the specimens collecting room.

**Table 10: Good Practices in the Lab (3/3)**

<b>Question: Presence of non-authorized personnel in the lab</b>	<b>Total number of observations</b>	<b>Number of observations n (Yes)</b>	<b>Frequency of sites (yes) percent</b>	<b>Comments</b>
Adults from the lab personnel relatives	44	2	<b>4.55</b>	-
Children	44	1	<b>2.27</b>	-
Other	44	9	20.45	7 health personnel from the site and <b>2 patients inside the lab</b>

Similar to the questions on eating and smoking in the lab, those data result from observations and not from interviews. This table shows that some non-authorized persons, including children, were seen in the laboratory by inspectors.

For confidentiality reasons, it not recommended to have several patients in the same specimens collecting room.

**Table 11: Respect of Patient’s Confidentiality**

<b>Question: Presence of several patients at the same time in the sample collecting room</b>	<b>Total number of observations</b>	<b>Number of observations n (Yes, several patients at the same time in the sample collecting room)</b>	<b>Frequency of sites with several patients at the same time in the sample collecting room percent</b>
Several patients at the same time in the sample collecting room	41	7	<b>17.07</b>

In 17 percent of the 41 sites, lab personnel collect samples of several patients at the same time in the sample collecting room.

- **Organization**

**Table 12: List of Tests Supplied by SCMS and Performed at the Sites**

<b>Question : Tick the tests being performed at the site among the following list</b>	<b>Total number of observations</b>	<b>Number of observations (Yes, test performed at the site)</b>	<b>Frequency of sites performing the test (Yes) percent</b>
Determine HIV	44	38	<b>86.36</b>
Oraquick HIV	44	6	14.64
Colloidal Gold HIV	44	36	81.82
SD Bioline HIV	44	12	<b>27.27</b>
RPR syphilis	44	27	<b>61.36</b>
TPHA syphilis	44	0	0
PPD	44	22	<b>50</b>
CD4 manual	44	11	25

This table shows that almost 14 percent of the sites do not offer HIV testing (Determine). As expected, very few still use “Ora Quick” since the most common algorithm, Determine HIV, is recommended for the first test and Colloidal Gold for confirmation.

There are some sites offering Determine HIV but not syphilis (RPR syphilis) whereas there is a strong willingness from MSPP to test both together. The TPHA syphilis is typically the test used for confirmation and is not currently being used. With regards to the efforts aimed to eliminate TB in Haiti, only half of the sites perform the PPD test (Tuberculine). Only a fourth perform CD4 manual, knowing that there is a strong willingness from LNSP to remove this test completely in Haiti for the following main reasons:

- The test is not reliable
- The manual technique is a lengthy process
- The reagents manufacturer is about to halt its production since Haiti one of the only countries to perform this lab test.

WHO disseminated on November, 11, 2011, a Field Safety Notice<sup>9</sup> to alert organizations that SD Bioline HIV is no longer WHO approved due to several complaints for high rates of invalid tests devices for some lot numbers. As seen in the below table, almost 30 percent are continuing to use SD Bioline HIV. It appears that some persons were confused between SD Bioline Syphilis and SD Bioline HIV. Some sites had declared using SD Bioline HIV, thinking it was SD Bioline syphilis. To verify this assumption, each of the 12 sites would need to be contacted directly.

<sup>9</sup> Source : WHO website, [Consulted on December, 12, 012]:  
[http://www.who.int/diagnostics\\_laboratory/procurement/111201\\_productalert\\_product0027\\_mx012\\_v2.pdf](http://www.who.int/diagnostics_laboratory/procurement/111201_productalert_product0027_mx012_v2.pdf)

**Table 13: Method for Collecting Blood Specimen**

<b>Question : precise the technique of blood collection used</b>	<b>Total number of observations</b>	<b>Number of observations n (Blood from Fingerprick)</b>	<b>Frequency of sites collecting blood from Fingerprick</b>	<b>Number of observations n (Blood from blood tube and Fingerprick)</b>	<b>Frequency of sites collecting blood from tube and Fingerprick</b>
Determine HIV	39	1	2.56	29	<b>74.36</b>
Syphilis	39	2	5.13	28	<b>71.79</b>

This issue affects almost 77 percent (2.56 percent + 74.36 percent) of the HIV sites and almost 77 percent (5.13 percent + 71.79 percent) as well for syphilis. The discrepancy of the responses between HIV and syphilis poses another question mark since one patient getting tested for HIV is supposed to be tested for syphilis at the same time. Therefore number of observations for the two questions should be the same.

This data will allow the Lab Program Manager of SDSH to identify the sites that may require additional training.

**Table 14: List of Tests Performed at the Sites**

<i>SDSH program</i>	<b>Question : Tick the other tests being performed at the site</b>	<b>Total number of observations</b>	<b>Number of observations n (Yes, test performed at the site)</b>	<b>Frequency of site performing the test percent (Yes)</b>
<i>MNCH</i>	Pregnancy test	44	44	<b>100</b>
<i>MNCH</i>	Blood group	44	34	77.27
<i>HIV, MNCH</i>	Malaria smear	44	37	84.09
<i>HIV, MNCH</i>	Malaria rapid test	44	11	25
<i>HIV, MNCH</i>	Malaria rapid test (not from authorized list)	11	6	<b>54.55</b>
<i>MNCH</i>	Vaginal discharge	44	37	84.09
<i>MNCH</i>	Stools	44	40	90.91

Those techniques have been specifically selected because some are linked to HIV, some to TB, and some to Maternal and Child Health (MNCH) as specified in the first column.

This table shows that 100 of the sites perform the pregnancy test (which is not supported by any organizations: health facilities need to pay their own tests or ask the patients to do so). And almost 78 percent are testing the blood group which is specifically required in case of surgeries for MNCH.

Malaria is a test recommended in the HIV guidelines in the case of cerebral toxoplasmosis suspicion. This table shows that almost 85 percent of the sites perform malaria smear which is directly supported by MSPP. However, almost 55 percent of the 11 sites declared using rapid test for malaria that were not authorized by the LNSP. Almost 84 percent of the site performs tests for vaginal discharge and 90 percent are performing stool tests, which is important in areas affected by cholera.

**Table 15: Presence of a Person in Charge of the Lab**

<b>Question : Presence of a head of lab</b>	<b>Total number of observations</b>	<b>Number of observations n (Yes)</b>	<b>Frequency of site percent (Yes)</b>
Head of lab	44	38	<b>86.36</b>

The presence of a head of lab is an essential element<sup>10</sup> for the implementation of activities focused on improving lab quality. This table demonstrates that 86 percent of the sites declared having a person in charge of the lab, serving as a point of contact for SDSH to implement activities.

This table shows data on stock outs for lab inputs. According to SCMS, it not acceptable for a site to suffer from more than three stock outs for a period of six months. This is the standard applied for this survey as reflected in the question: *Did you have three or more than three stock outs between January 2012 and June 2012 for the following tests?*

**Table 16: Stock Outs for Products Supplied by SCMS**

<b>Question : Tick the tests for which you had at least 3 stock outs between January 2012 and June 2012</b>	<b>Total number of observations</b>	<b>Number of observations n (Yes, at least 3 stock out between January 2012 and June 2012)</b>	<b>Frequency of site with at least 3 stocks out between January 2012 and June 2012 percent (Yes)</b>
Determine HIV	44	8	<b>18.18</b>
Ora quick HIV	44	0	0
Colloidal Gold HIV	44	0	0
RPR syphilis	44	3	<b>6.82</b>
TPHA Syphilis	44	0	0
PPD	44	5	<b>11.36</b>
TB sputum reagents	44	1	2.27
Reagents for malaria smear	44	7	<b>15.91</b>
Rapid test for malaria	44	2	4.55
Pregnancy test	44	12	<b>27.27</b>

This table shows that 18 percent of the sites suffered from at least three stock outs for Determine HIV. Nearly seven percent suffered from more than three stocks out for RPR syphilis for the same period and 11 percent for PPD. Almost 16 percent of the sites had more than three stocks during a six month period

<sup>10</sup> Source : Laboratoire National de Santé Publique. Good Practices of Laboratory , Version September 1, 2010

for the malaria smear reagents supplied by MSPP. Almost 28 percent of the sites had more than three stocks out for pregnancy tests between January and June 2012.

**Table 17: Use of a Main Lab Register**

<b>Question : Use of one main lab register</b>	<b>Total number of observations</b>	<b>Number of observations n (Yes)</b>	<b>Frequency of site percent (Yes)</b>
Use of one main lab register	44	38	<b>86.36</b>

The lab is supposed to use one main Lab register to gather all tests performed for all patients<sup>11</sup>. Eighty-six percent of the sites declared using this kind of document.

**Table 18: Total number of registers used at the sites**

<b>Question : Total number of lab registers</b>	<b>Total number of observations</b>	<b>Total number of registers</b>	<b>Average number of registers per site</b>
Total no. of lab registers	26	128	4.9

The total number of registers for the 26 sites is 128 which corresponds on average to 4.9 registers per site.

- **Equipment**

The sites considered as ARV sites should be equipped with the following two types of equipment:

- Sysmex, for performing the Hematology tests
- Reflotron for performing the chemical tests

For the automatic CD4, only a few are equipped with BD Facs count, since the remaining should benefit soon from the national network of CD4 specimens transport due to the high price of this machine. Similarly for PIMA, which is another machine for performing the CD4 automatic, only a few sites are equipped since this machine is mainly targeting inaccessible sites with low volume of active ARV patients.

Furthermore, the Standard Operating Procedures (SOP) developed by LNSP for performing the BAAR (Bacille Acido-Alcoolique Résistant) coloration on TB sputum indicates the fixation of the TB smear by passing the slide in the flame which requires a Bunsen burner or alcohol lamp.

<sup>11</sup> Source : Laboratoire National de Santé Publique. Good Practices of Laboratory , Version September 1, 2010

**Table 19: List of Equipment Available at the Sites**

Question : Availability of equipments	Total number of observations	Number of observations n (Yes, equipment available)	Frequency of sites with the equipment available (Yes) percent	Number of observations n (Yes, equipment available but not functional)	Frequency of sites with available but not functional equipment percent
Sysmex	44	6	13.64	2	4.55
Reflotron	44	4	9.09	1	2.27
Centrifuge machine for blood tubes	44	37	84.09	4	<b>9.09</b>
Centrifuge machine for hematocrit	44	19	<b>43.18</b>	2	<b>4.55</b>
Bunsen burner of alcohol lamp for TB sputum technique	44	16	<b>36.36</b>	2	<b>4.55</b>

Very few sites are equipped with Sysmex and Reflotron. However, two sites were equipped with Sysmex but not with Reflotron. Almost 85 percent (84.09) are equipped with a centrifuge machine but nine percent of the sites have a centrifuge machine which is not functional. Fewer than half are equipped with a specific centrifuge machine allowing the hematocrit test and only 36 percent are equipped with a Bunsen burner or alcohol lamp enabling the TB smear fixation.

- **Facilities & safety**

As described in the section III paragraph three, this category has been split into three main topics:

- Facility
- Protection equipment
- Lab waste management

- **Facility**

According to WHO recommendations<sup>12</sup>, it is not recommended to have a wooden or metal work surface. Wood surfaces can contribute to microbacterial growth and metal surfaces become easily damaged with the chlorine used for cleaning. The best material for a work surface is ceramics.

<sup>12</sup> Source : World Health Organization. Laboratory biosafety manual, 3rd edition. Geneva: World, Health Organization; 2004;p 11 and p12 [Consulted on December, 12, 2012]: [http://www.who.int/csr/resources/publications/biosafety/WHO\\_CDS\\_CSR\\_LYO\\_2004\\_11/en/](http://www.who.int/csr/resources/publications/biosafety/WHO_CDS_CSR_LYO_2004_11/en/)

**Table 20: Material Used for the Lab Bench (Work Surface)**

<b>Question: Material of the bench</b>	<b>Number of observations n</b>	<b>Frequency of sites percent</b>
(0) All are in wood or metal	16	<b>36.36</b>
(1) All are in ceramics	23	<b>52.27</b>
(2) Some are in wood/metal and some in ceramics	3	6.82
(3) Other material	2	4.55
TOTAL	44	100

As shown in the table #20, only about half (52.27) of all the lab work surfaces are ceramic. Almost 40 percent of the sites have their entire work surface in wood or metal.

**Table 21: Availability of Water in the Lab**

<b>Question: Availability of tap water</b>	<b>Number of observations n</b>	<b>Frequency of sites percent</b>
(0) Always	17	38.64
(1) Irregular	15	<b>34.09</b>
(2) Never available	12	<b>27.27</b>
TOTAL	44	100

Availability of power is a key element when implementation of new automatic lab equipment has to be considered since this equipment is very sensitive to power fluctuations. It is not recommended by LNSP to install Sysmex, Reflotron and BD Facs Count in a lab where there are power outages.

**Table 22: Availability of Power in the Lab**

<b>Question: Availability of power</b>	<b>Number of observations n</b>	<b>Frequency of sites percent</b>
(0) Always available without cut	14	31.82
(1) Usually available but with cuts	19	<b>43.18</b>
(2) Frequent cuts	10	<b>22.73</b>
(3) Never available	1	2.27
TOTAL	44	100

As described in the Table #22, only 32 percent have access to a source of power which is always available with no power outages. Forty-three percent of the sites suffer from power outages and almost 23 percent which experience frequent outages whereas only two percent never has access to power in the lab.

As recommended by WHO, only authorized persons can be present in the lab. The lab is a working place with many potentially dangerous materials such as needles, chemicals, etc. It is therefore very important to ensure that samples are isolated and patients do not have access to this area.

**Table 23: Respect of Patient's Confidentiality**

<b>Question: Presence of an isolated samples collecting room</b>	<b>Number of observations n</b>	<b>Frequency of sites percent</b>
Yes	15	34.09
No	29	<b>65.91</b>
TOTAL	44	100

Out of the 44 sites included in the evaluation, almost 66 percent of the sites do not have an isolated samples collecting room.

Surface of the lab is also subject to norms. As per LNSP definition<sup>13</sup>, a medical laboratory needs a minimum surface of 10 m<sup>2</sup> to be considered as a medical laboratory.

**Table 24: Surface of the Lab**

<b>Question: Surface of the lab</b>	<b>Number of observations n</b>	<b>Average</b>	<b>Number of sites n with a surface &lt; 10m<sup>2</sup></b>	<b>Frequency of sites percent with a surface &lt; 10m<sup>2</sup></b>	<b>Average of surface for the sites with a surface &lt; 10m<sup>2</sup></b>
Surface of the lab in m <sup>2</sup>	38	16.26	18	<b>47.37</b>	<b>5.05</b>

As described in the table #24, the average surface for the 38 sites which replied, is 16m<sup>2</sup>. However, almost 50 percent of the 38 sites (47.37) have a surface less than 10 m<sup>2</sup> and for those sites the average surface is 5m<sup>2</sup>.

To limit the risk of TB exposure to lab personnel<sup>14</sup>, it is recommended that the site has a specific TB lab only dedicated to TB sputum technique.

<sup>13</sup> Source : Draft of the new updated version of the LNSP evaluation questionnaire, under revision.

<sup>14</sup> Source : World Health Organization. Laboratory biosafety manual, 3rd edition. Geneva: World, Health Organization; 2004; p66 [Consulted on December, 12, 2012]: [http://www.who.int/csr/resources/publications/biosafety/WHO\\_CDS\\_CSR\\_LYO\\_2004\\_11/en/](http://www.who.int/csr/resources/publications/biosafety/WHO_CDS_CSR_LYO_2004_11/en/)

**Table 25: Presence of a specific TB lab**

<b>Question: Presence of a specific TB lab</b>	<b>Number of observations n</b>	<b>Frequency of sites percent</b>
(0) TB smear and staining are done in a specific separate room only dedicated to TB	6	<b>13.64</b>
(1) Tb smear and staining are done in the main lab	23	<b>52.27</b>
(2) The TB smear is done outside at a specific location and the staining in the main lab	7	15.91
(3) The TB smear and the staining are done outside at a specific location	2	4.55
(4) Other	4	9.09
(5) Not applicable because the TB sputum is not performed at the site	2	4.55
<b>TOTAL</b>	<b>44</b>	<b>100</b>

Out of the 44 sites, 42 are performing the TB sputum technique. For more than the half of the sites (out of the 44), the TB sputum technique (including performing the smear, which is the highest contaminating step of the technique) is performed in the main lab. Less than 14 percent of the sites have a specific TB lab.

**- Protection equipment**

**Table 26: Availability of Gloves**

<b>Question: Availability of disposable gloves</b>	<b>Number of observations n</b>	<b>Frequency percent</b>
(0) Yes always in sufficient quantity	26	59.09
(1) Yes but sometimes insufficient quantity	15	<b>34.09</b>
(2) Yes but always insufficient quantity	3	6.82
(3) No gloves never available	0	0
<b>TOTAL</b>	<b>44</b>	<b>100</b>

Out of the 44 sites, 34 percent declare having some issues of gloves availability and almost 7 percent are always running out of gloves.

**Table 27: Availability of Lab Jackets**

<b>Question: Availability of lab jacket</b>	<b>Number of observations n</b>	<b>Frequency percent</b>
(0) Yes and sufficient quantity	18	40.91
(1) Yes but insufficient quantity	14	<b>31.82</b>
(2) No lab jacket never available	12	<b>27.27</b>
TOTAL	44	100

Regarding the availability of lab jackets, out of the 44 sites, almost 32 percent declared not having a sufficient quantity of lab jackets whereas almost 30 percent (27.27) never had lab jackets available at their sites. Responses were collected from the inspectors' observations and not from questions being asked.

**Table 28: Wearing Gloves**

<b>Question: Lab technicians wear gloves</b>	<b>Number of observations n</b>	<b>Frequency of sites percent</b>
(0) All lab technicians wear gloves	39	<b>92.86</b>
(1) Some lab technicians wear gloves	1	2.38
(2) None of the lab technicians wear gloves	2	4.76
TOTAL	42	100

In 93 percent of the 42 sites, inspectors declared all lab technicians wear gloves and less than 5 percent do not.

**Table 29: Wearing of Lab Jackets**

<b>Question: Lab technicians wear Lab jacket</b>	<b>Number of observations n</b>	<b>Frequency of sites percent</b>
(0) All lab technicians wear a lab jacket	29	<b>69.05</b>
(1) Some lab technicians wear a lab jacket	4	9.52
(2) None of the lab technicians wear a lab jacket	9	21.53
TOTAL	42	100

The responses result from the inspectors' observations and not from questions being asked. Out of the 42 sites for which a reply was recorded, only 69 percent wear a lab jacket and almost 22 percent the lab personnel never wear a lab jacket.

**Table 30: Availability of FFP2 Respiratory Masks**

<b>Question: Availability of FFP2 respiratory masks for Tb sputum technique</b>	<b>Number of observationsn</b>	<b>Frequency percent</b>
(0) Yes and they are always available	1	2.27
(1) Yes but they are not always available	3	6.82
(2) No not available	34	<b>77.27</b>
(3) Doesn't know	3	6.82
(4) Not applicable the TB sputum is not performed	3	6.82
TOTAL	44	100

Seventy-seven percent of the sites never have FFP2 respiratory masks available for the TB sputum technique and only two percent have a sufficient quantity.

**Table 31: Wearing of FFP2 Respiratory Masks**

<b>Question: Lab technicians wear FFP2 respiratory masks while performing TB smear</b>	<b>Number of observations n</b>	<b>Frequency percent</b>
(0)All technicians wear and every time they perform TB smear	14	<b>31.82</b>
(1)All technicians wear but not every time they perform TB smear	4	9.09
(2)Some technicians wear and every time they perform TB smear	0	0
(3) Some technicians wear but not every time they perform TB smear	2	4.55
(4) None of the technicians wear	17	38.64
(5) Doesn't know	2	4.55
(6) TB not performed at the site	5	11.36
TOTAL	44	100

Nearly 32 percent declared wearing FFP2 respiratory masks every time they perform the TB sputum technique and almost 39 percent never wear it.

**Table 32: Availability of Protection Equipment for Cleaning Personnel**

<b>Question: Tick the protection equipment worn by personnel in charge of cleaning the lab</b>	<b>Total number of observations</b>	<b>Number of observations n</b>	<b>Frequency of sites percent</b>
Boots or closed shoes	44	4	<b>9.09</b>
Thick gloves	44	21	47.73
Jacket	44	9	<b>20.45</b>
Masque	44	7	15.91
Protective glasses	44	1	2.27
The lab is never cleaned	44	0	0
No protection material is worn	44	11	<b>25</b>

Out of the 44 sites, a fourth declared that the persons in charge of cleaning the lab do not wear any protection materials. Only 20 percent (20.45) wear a jacket and nine percent wear boots or closed shoes. Almost half wears thick gloves for cleaning the lab.

**- Lab waste management**

✓ **Dustbins**

**Table 33: Availability of Dustbins for Contaminated Waste**

<b>Question: Availability of a dustbin for contaminated waste</b>	<b>Number of observations n</b>	<b>Frequency percent</b>
(0)Yes clearly identified	9	21.43
(1)Yes but not clearly identified	9	21.43
(2)No specific dustbin	24	<b>57.14</b>
TOTAL	42	100

<b>Question: Availability of a dustbin for contaminated waste</b>	<b>Number of observations n</b>	<b>Frequency percent</b>
(0)With cover and pedal	5	<b>11.9</b>
(1)with cover but no pedal	12	28.57
(2)No cover	6	14.29
(3)No specific dustbin	19	<b>45.24</b>
TOTAL	42	100

Fifty-seven percent do not have a specific dustbin for contaminated waste;<sup>15</sup> however, 45 percent declared not having a specific dustbin which is discordant with the replies from the first table. Therefore

<sup>15</sup> Source : World Health Organization. Laboratory biosafety manual, 3rd edition. Geneva: World, Health Organization; 2004; p18 [Consulted on December, 12, 2012]: [http://www.who.int/csr/resources/publications/biosafety/WHO\\_CDS\\_CSR\\_LYO\\_2004\\_11/en/](http://www.who.int/csr/resources/publications/biosafety/WHO_CDS_CSR_LYO_2004_11/en/)

these questions may have been misinterpreted. Results should be interpreted with caution though the lowest rate (45.24 percent) of these two remains high. The first table shows that only 21 percent have one specific dustbin for contaminated waste. Nevertheless, only 12 percent have a specific dustbin with a cover and pedal.

**Table 34: Availability of Specific Color Plastic Bags for Contaminated Waste**

<b>Question: Specific color of plastic bags for contaminated waste dustbin</b>	<b>Total number of observations</b>	<b>Number of observations n (Yes)</b>	<b>Frequency of sites with specific color of plastic bags for contaminated waste dustbin percent</b>
Specific color of plastic bags for contaminated waste dustbin	41	8	<b>19.51</b>

Less than 20 percent benefit from specific color plastic bags for the contaminated dustbin.

**Table 35: Availability of Dustbins for Non-contaminated Waste**

<b>Question: Availability of a dustbin for non-contaminated waste</b>	<b>Number of observations n</b>	<b>Frequency percent</b>
(0)Yes clearly identified	6	14.29
(1)Yes but not clearly identified	6	14.29
(2)No specific dustbin	30	<b>71.43</b>
TOTAL	42	100

Almost 72 percent declared not having a specific dust bin for non-contaminated waste and only 14 percent do have one which is clearly identified.

**Table 36: Availability of Dustbins for TB Contaminated Waste**

<b>Question: Availability of a dustbin for Tb contaminated waste</b>	<b>Number of observations n</b>	<b>Frequency percent</b>
(0) Specific dustbin with cover and pedal for TB contaminated waste	11	<b>25</b>
(1) Specific dustbin for TB contaminated waste but no cover	4	9.09
(2) Specific dustbin for TB contaminated waste with cover but no pedal	1	2.27
(3) No specific dustbin for TB contaminated waste	24	<b>54.55</b>
(4) TB not performed at the site	4	9.09
TOTAL	44	100

Out of the 44 sites which responded, only a fourth has a specific dustbin with cover and pedal for the TB contaminated waste and more than the half (54.55) do not have a specific dustbin for TB contaminated waste.

**Table 37: Availability of Biosafety Boxes**

<b>Question: Availability of biosafety boxes</b>	<b>Number of observations n</b>	<b>Frequency percent</b>
(0) Yes quantity always sufficient	32	<b>76.19</b>
(1) Yes quantity sometimes insufficient	6	14.29
(2) Yes quantity always insufficient	2	4.76
(3) Not used	2	<b>4.76</b>
TOTAL	42	100

Seventy-six percent of the 42 sites which benefit from a quantity always sufficient of biosafety boxes whereas almost five percent never use the biosafety boxes.

✓ **Cleaning of the lab**

**Table 38: Cleaning of the Lab**

<b>Question: Frequency of cleaning the lab</b>	<b>Number of observations n</b>	<b>Frequency percent</b>
(0) Twice a day	26	61.9
(1) Once a day	14	33.33
(2) Less than once a day	2	<b>4.76</b>
TOTAL	42	100

Approximately 62 percent of the sites are cleaned twice a day and a third are cleaned daily.

**Table 39: Persons Cleaning the Lab**

<b>Question: Persons cleaning the lab</b>	<b>Number of observations n</b>	<b>Frequency percent</b>
(0) Lab personnel	2	4.76
(1) Cleaning persons	39	<b>92.86</b>
(2) Doesn't know	0	0
(3) Other	1	2.38
TOTAL	42	100

Almost 93 percent of the labs are cleaned by cleaning personnel.

**Table 40: Products for Cleaning the Lab**

<b>Question: Products used for cleaning the lab</b>	<b>Number of observations n</b>	<b>Frequency percent</b>
(0) Water	0	0
(1) Water and soap	1	2.38
(2) Water and chlorine	40	<b>95.24</b>
(3) The lab is not cleaned	0	0
(4) Other	1	2.38
TOTAL	42	100

Labs are cleaned with water and chlorine<sup>16</sup> in 95 percent of the sites.

**Table 41: Training on Waste Management**

<b>Question: Training on waste bags manipulations for cleaning personnel</b>	<b>Number of observations n</b>	<b>Frequency percent</b>
(0) Yes	11	26.19
(1) No	29	<b>69.05</b>
(2) Doesn't know	2	4.76
TOTAL	42	100

Almost 70 percent of the labs are cleaned by people who didn't receive trainings on how to handle contaminated waste bags.

<sup>16</sup> Source : World Health Organization. Laboratory biosafety manual, 3rd edition. Geneva: World, Health Organization; 2004; p 76 [Consulted on December, 12, 2012]: [http://www.who.int/csr/resources/publications/biosafety/WHO\\_CDS\\_CSR\\_LYO\\_2004\\_11/en/](http://www.who.int/csr/resources/publications/biosafety/WHO_CDS_CSR_LYO_2004_11/en/)

✓ Elimination of waste

**Table 42: Use of Biosafety Boxes**

<b>Question: Cutting and sharp objects are thrown in biosafety boxes</b>	<b>Number of observations n</b>	<b>Frequency percent</b>
Yes	39	92.86
No	3	<b>7.14</b>
TOTAL	42	100

Seven percent of sites declared that they do not dispose of cutting and sharp objects in biosafety boxes.

**Table 43: Decontamination of Waste**

<b>Question: Destruction with chlorine of some waste before elimination</b>	<b>Number of observations n</b>	<b>Frequency percent</b>
Yes	17	<b>40.48</b>
No	25	59.52
TOTAL	42	100

Only 40 percent declare decontaminating some waste before eliminating them.

**Table 44: Method for Lab Waste Destruction**

<b>Question: Method of lab waste destruction</b>	<b>Number of observations n</b>	<b>Frequency percent</b>
(0) By an external company which comes to collect waste	1	2.38
(1) On site burning	16	38.1
(2) Burning on another site	4	9.52
(3) On site burying at less than 5m from the health facility	7	16.67
(4) On site burying at more than 5m from the health facility	3	7.14
(5) Lab waste are not eliminated but thrown with domestic waste	4	<b>9.52</b>
(6) Doesn't know	4	9.52
(7) Other	3	7.14
TOTAL	42	100

The lab waste is burned at 38 percent of the sites<sup>17</sup>. Waste is buried in almost 17 percent of the sites just next to the site (16.67). Approximately 10 percent of the sites mix lab waste with regular domestic waste.

## Analysis

This lab evaluation highlighted eight positive elements of lab activities currently being offered, as described in the Table 45.

**Table 45: List of Positive Outcomes**

Category	Results
<b>PERSONNEL (1)</b>	
<b>Human Resources Data</b>	
Number of bacilloscopist available at the site	Almost 1 per site on average
<b>ORGANIZATION (3)</b>	
Pregnancy test	100 percent of sites performing pregnancy test
Head of lab	86 percent have a head of lab
Main register Lab	86 percent use one main register lab (LNSP recommendation)
<b>FACILITY &amp; SAFETY (4)</b>	
<b>Protection equipment</b>	
Gloves	92 percent of the sites have all their lab technicians wearing gloves
<b>Lab waste management</b>	
Cleaning of the lab	Less than 5 percent clean their lab less than once a day
Personnel cleaning the lab	92 percent of lab are cleaned by cleaning personnel
Water and chlorine	95 percent of the labs are cleaned with water and chlorine

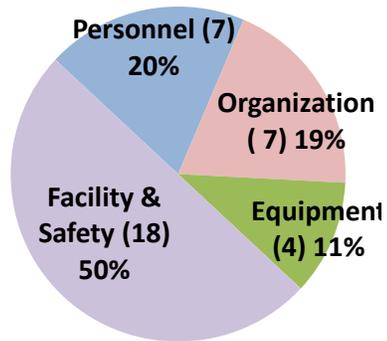
During the data collection, SDSH staff received draft of the new version of the LNSP Lab evaluation questionnaire which will be used by LNSP to assess all medical laboratories in the country. It indicates the minimal requirements for being considered as a medical laboratory.

Upon review of the evaluation questionnaire developed by LNSP, there are a few questions which were covered by this lab evaluation whereas others were not. It is almost certain that all laboratories belonging to MSH network do not comply with the minimal requirements:

- Availability of documented SOPs in the lab
- Availability of an ocular shower
- Chemical products are stored in a specific storage cabinet
- Electrical wires are in good conditions and in a secure place
- Availability of extinguishers which are functional

<sup>17</sup> Source : World Health Organization. Laboratory biosafety manual, 3rd edition. Geneva: World, Health Organization; 2004; p92 [Consulted on December, 12, 2012]: [http://www.who.int/csr/resources/publications/biosafety/WHO\\_CDS\\_CSR\\_LYO\\_2004\\_11/en/](http://www.who.int/csr/resources/publications/biosafety/WHO_CDS_CSR_LYO_2004_11/en/)

- Etc.



Additional lab evaluations performed in the future by LNSP will likely not demonstrate good results. However, this lab evaluation should be considered as an opportunity to formulate recommendations and identify the priorities in order to meet the new LNSP requirements. To improve the quality of the current lab services offered in the country in the health centers supported by MSH, 36 recommendations have been formulated based upon the results of the Lab evaluation and are shown in the table #46. The breakdown of the recommendations is described in the Figure No 5.

**Figure 5: Breakdown of the Recommendations According to the Four WHO Building Blocks**

Each category belonging to the four WHO building blocks has been analyzed according to the impact in terms of public health and data resulted from the Lab evaluation. Recommendations have been formulated in order to improve the Lab services quality. For each recommendation, feasibility has been estimated with a code system defined as follows:

- + : feasible
- 0 : feasible if budget allows it
- : feasibility to be determined.

Three categories of recommendations have been defined, resulting from the analysis, according to their urgent aspect:

- Very urgent
- Urgent
- Medium

**Table 46: List of the 36 Recommendations**

Area of improvement (36)	Recommendation	Feasibility	Relevant data from evaluation	Very urgent (1 month)	Urgent (3 months)	Medium (6 months)
<b>PERSONNEL (7)</b>						
<b>Human Resources Data</b>						
Many sites have only 1 lab personnel	Identify solutions to add 1 additional staff if relevant	-	38 percent with 1 lab personnel			<b>X</b>
<b>Training needs</b>						
Many sites need refresher trainings for lab techniques	Identify priority sites and techniques and plan trainings with LNSP	+	56 percent HIV, 66 percent syphilis, 74 percent Tb sputum, 77 percent PPD, 74 percent stools, 42 percent blood group		<b>X</b>	
<b>Attitude of lab personnel</b>						
Some personnel eat and smoke in the lab which is forbidden	Design and print bill boards and ensure all sites have it put on the wall, provide little training to lab personnel	+	12 percent eating in the lab, 2 percent smoking in the lab			<b>X</b>
Some personnel store food in the fridge which is forbidden	Design and print bill boards and ensure all sites have it put on the fridge, provide little training to lab personnel	+	5 percent with food in the fridge			<b>X</b>
Some sites do not have fridge which can pose a problem for some reagents' storage condition such as PPD, blood group reagents, etc.	Check with SCMS since each VCT site should have a fridge	-	43 percent without fridge			<b>X</b>
<b>Area of improvement (36)</b>	<b>Recommendation</b>	<b>Feasibility</b>	<b>Relevant data from evaluation</b>	<b>Very urgent (1month h)</b>	<b>Urgent (3months)</b>	<b>Medium (6months)</b>

<b>Non authorized persons seen in the lab which poses a problem of safety</b>	Design and print bill boards and ensure all sites have it put on the door, provide little training to lab personnel and medical personnel to explain who is allowed to come inside	+	5 percent adults, 2 percent children seen and 2 patients inside the lab seen		<b>X</b>	
<b>Several patients are simultaneously drawing sample which doesn't provide confidentiality</b>	Identify solutions when possible to ensure 1 patient is taken a sample at a time in confidentiality conditions (ex: use of a screen for large sites with high volume of patients? and education of health personnel on confidentiality importance)	-	17 percent with several patients at the same time in the sample collecting room		<b>X</b>	
<b>ORGANIZATION (7)</b>						
<b>Some sites do not perform Determine HIV</b>	Identify reasons for not delivering HIV testing and implement HIV testing when possible (collaboration with SCMS)	+	86 percent HIV		<b>X</b>	
<b>The percentage of sites performing HIV and syphilis are different</b>	Identify reasons for the gap and ensure syphilis testing is offered in all sites offering HIV (collaboration with SCMS, check with the concerned sites)	+	86 percent HIV and 61 percent syphilis		<b>X</b>	
<b>Area of improvement (36)</b>	<b>Recommendation</b>	<b>Feasibility</b>	<b>Relevant data from evaluation</b>	<b>Very urgent (1month)</b>	<b>Urgent (3months)</b>	<b>Medium (6months)</b>

<b>Some sites are using SD Bioline HIV which has been removed from WHO approved list of HIV test in 2011</b>	<i>A call to each concerned site revealed that this result is due to a misunderstanding of the question. People ticked thinking it was SD bioline Syphilis</i>	+	27 percent using SD Bioline HIV			
<b>Not all sites perform PPD</b>	Identify sites which should provide PPD and ensure they are getting the supplies appropriately and that the staff is trained. Contact SCMS and PNLT to know who should be the official provider since it is unclear.	-	50 percent offering PPD	X		
<b>The majority of the sites collect blood with the fingerprick but discrepancy of replies between HIV and syphilis</b>	Discussion with Itech and plan of refresher trainings with sites if relevant. Discrepancy of replies between HIV and syphilis is probably due to a misunderstanding of the question (quality of interviews)	-	77 percent use finger prick for HIV and syphilis	X		
<b>Some sites are using non approved rapid malaria test</b>	Ensure all the sites are using LNSP approved rapid malaria tests (check with the concerned sites)	+	4.5 percent (2sites out of 44) using non approved malaria rapid tests	X		
<b>Some sites suffered from 3 or more stock out during a 6 months period</b>	Strengthen stock management at the sites and collaboration with suppliers (SCMS, PNLT for Tb, MSPP for malaria). Activity planned for 2013	+	18 percent Determine, 7 percent Syphilis, 11 percent PPD, 16 percent malaria reagents		X	
<b>Area of improvement (36)</b>	<b>Recommendation</b>	<b>Feasibility</b>	<b>Relevant data from evaluation</b>	<b>Very urgent (1month h)</b>	<b>Urgent (3months)</b>	<b>Medium (6months)</b>

<b>EQUIPMENT (4)</b>						
<b>Very few sites are equipped with functional Bunsen burner/alcohol lamp for TB sputum</b>	Identify solutions to enable supply of those products and ensure trainings to the lab staff. Check with LNSP and PNLT	-	36 percent equipped with Bunsen burner/alcohol lamp		<b>X</b>	
<b>Some sites have equipment, not functional</b>	Identify solutions to repair or replace the equipment and implement an effective maintenance plan. Check with SCMS for maintenance	-	9 percent with non-functional centrifuge and 5 percent non-functional centrifuge for hematocrite			<b>X</b>
<b>Some sites are not equipped with centrifuge for blood tube</b>	Identify solutions to enable supply of those products and ensure trainings to the lab staff. Check with SCMS	-	84 percent equipped		<b>X</b>	
<b>Some sites are not equipped with centrifuge for hematocrit</b>	Identify solutions to enable supply of those products and ensure trainings to the lab staff. Check with SCMS	-	43 percent equipped			<b>X</b>
<b>FACILITY &amp; SAFETY (18)</b>						
<b>Facility</b>						
<b>Half of the sites have Lab work surface in ceramics which is the only recommended material</b>	Identify solutions to equip all the sites with Lab work surface in ceramics	<b>0</b>	52 percent with all benches made of ceramic material			<b>X</b>
<b>Only a few sites benefit from a regular access to tap water</b>	Identify solutions to ensure regular access to tap water when possible	<b>0</b>	39 percent regular access, 34 percent irregular, 27 percent never access			<b>X</b>
<b>Area of improvement (36)</b>	<b>Recommendation</b>	<b>Feasibility</b>	<b>Relevant data from evaluation</b>	<b>Very urgent (1month h)</b>	<b>Urgent (3months)</b>	<b>Medium (6months)</b>

<b>Only a few sites benefit from a regular access to power</b>	Identify solutions to ensure regular access to power when possible	<b>0</b>	23 percent frequent cuts, 2 percent never access			<b>X</b>
<b>Very few sites have an isolated specimen collecting room which poses problems of safety and confidentiality, especially for vaginal samples and HIV patients</b>	Identify solutions and sites to have an isolated sample collecting room (ex: use of a screen for small sites where renovation work is not possible? and education of health personnel on confidentiality importance)	<b>0</b>	34 percent with isolated sample collecting room			<b>X</b>
<b>Many sites have a surface &lt; 10m<sup>2</sup>, the LNSP minimal requirements</b>	Identify solutions and sites where surface could be increased. Find partners to finance renovation work?	<b>0</b>	47 percent with surface < 10m <sup>2</sup>			<b>X</b>
<b>Very few sites have a specific Tb lab</b>	Identify solutions and sites where TB lab could be implemented Find partners to finance renovation work?	<b>0</b>	14 percent with specific Tb lab, 52 percent perform Tb technique in the main lab		<b>X</b>	
<b>Protection equipment</b>						
<b>Few sites have enough quantity of gloves</b>	Identify solutions to ensure appropriate supply of gloves and always for all sites. Check SCMS, strengthen stock management (planned for 2013)	<b>+</b>	60 with appropriate quantity of gloves and always		<b>X</b>	
<b>Area of improvement (36)</b>	<b>Recommendation</b>	<b>Feasibility</b>	<b>Relevant data from evaluation</b>	<b>Very urgent (1month)</b>	<b>Urgent (3months)</b>	<b>Medium (6months)</b>

<b>Few sites have enough quantity of lab jacket</b>	Identify solutions to ensure appropriate supply of lab jacket and always for all sites. Find partners to finance because usually provided by personnel (Caracol complex?)	<b>0</b>	40 percent with appropriate quantity of lab jacket and always, 27 percent never available, 69 percent lab personnel wear a lab jacket	<b>X</b>		
<b>Very few sites have FFP2 respiratory mask and those who have, do not have enough quantity</b>	Identify partners to provide adequate supplies of FFP2 masks for Tb sites performing Tb sputum. Contact PNLT for national policy?	<b>0</b>	78 percent never available, 2 percent always available	<b>X</b>		
<b>Lack of protection materials for the cleaning personnel</b>	List the minimum requirements for protection materials and identify partners to provide adequate supplies of protection equipment for the cleaning personnel. Contact MSPP?	<b>0</b>	25 percent no protection materials, 20 percent wear lab jacket, 9 percent boots	<b>X</b>		
<b>Lab waste management</b>						
<b>Dustbins</b>						
<b>Few sites have a specific, clearly identified with cover and pedal dustbins for their contaminated waste</b>	Provide all the sites with a cover dustbin with pedal for the contaminated dustbin and provide a training for the good use	<b>0</b>	57 percent have no specific dustbin for contaminated waste	<b>X</b>		
<b>Very few sites have a specific color code plastic bags for the contaminated dustbin</b>	Provide all the sites with adequate and regular supply of red color plastic bags for the contaminated dustbin and provide a training for the good use	<b>0</b>	19 percent do have specific color bags	<b>X</b>		
<b>Few sites have a specific, clearly</b>	Provide all the sites with a cover dustbin	<b>0</b>	71 percent do not have specific	<b>X</b>		

<b>identified with cover and pedal dustbins for their non-contaminated waste</b>	with pedal for the non-contaminated dustbin and provide a training for the good use		dustbins for non-contaminated waste			
<b>Very few sites have a specific, clearly identified with cover and pedal dustbins for their Tb sputum contaminated waste</b>	Provide training on waste management to personnel. Ministry of environment?	+	54 percent do not have specific dustbins for Tb sputum contaminated waste	X		
<b>Some sites do not use biosafety boxes or suffer from stock outs</b>	Ensure appropriate supply of those biosafety boxes (contact UNICEF) and contact the sites not using them to know the reason and provide training to the sites not using if relevant.	-	76 percent use and have enough quantity always	X		
<b>Cleaning</b>						
<b>Very few sites have cleaning personnel being trained on how to handle contaminated dust bins</b>	Provide training to cleaning personnel on how to handle contaminated dust bins. Ministry of environment?	-	26 percent trained	X		
<b>Elimination</b>						
<b>Not all the sites are using biosafety boxes</b>	Ensure appropriate supply of those biosafety boxes (contact UNICEF) and contact the sites not using them to know the reason and provide training to the sites not using if relevant.	-	7 percent not using	X		
<b>Some sites throw their contaminated waste with domestic waste</b>	Ensure all the sites have an appropriate process for eliminating the contaminated waste	-	10 percent throw with normal waste	X		

**Table 47: Summary of the Suggested Recommendations**

<b>VERY URGENT (1 month) - 13 recommendations</b>	
1	Identify sites which should provide PPD and ensure they are getting the supplies appropriately and that the staff is SCMS and PNLT to know who should be the official provider since it is unclear.
2	Discussion with Itech and plan of refresher trainings with sites if relevant.
3	Ensure all the sites are using LNSP approved rapid malaria tests (check with the concerned sites)
4	Identify solutions to ensure appropriate supply of lab jacket and always for all sites. Find partners to finance because provided by personnel (Caracol complex?)
5	Identify partners to provide adequate supplies of FFP2 masks for Tb sites performing Tb sputum. Contact PNLT for
6	List the minimum requirements for protection materials and identify partners to provide adequate supplies of protection equipment for the cleaning personnel. Contact MSPP?
7	Provide all the sites with a cover dustbin with pedal for the contaminated dustbin and provide a training for the good
8	Provide all the sites with adequate and regular supply of red color plastic bags for the contaminated dustbin and provide for the good use
9	Provide a training on waste management to personnel. Ministry of environment?
10	Ensure appropriate supply of those biosafety boxes (contact UNICEF) and contact the sites not using them to know provide training to the sites not using if relevant.
11	Provide training to cleaning personnel on how to handle contaminated dust bins. Ministry of environment?
12	Ensure appropriate supply of those biosafety boxes (contact UNICEF) and contact the sites not using them to know provide training to the sites not using if relevant.
13	Ensure all the sites have an appropriate process for eliminating the contaminated waste
<b>URGENT (3 months) - 11 recommendations</b>	
1	Identify priority sites and techniques and plan trainings with LNSP
2	Design and print bill boards and ensure all sites have it put on the door, provide little training to lab personnel and personnel to explain who is allowed to come inside
3	Identify solutions when possible to ensure 1 patient is taken a sample at a time in confidentiality conditions (ex: use large sites with high volume of patients? and education of health personnel on confidentiality importance)
4	Identify reasons for not delivering HIV testing and implement HIV testing when possible (collaboration with SCMS)
5	Identify reasons for the gap and ensure syphilis testing is offered in all sites offering HIV (collaboration with SCMS, concerned sites)
6	Strengthen stock management at the sites and collaboration with suppliers (SCMS, PNLT for Tb, MSPP for malaria). for 2013
7	Identify solutions to enable supply of Bunsen burner/alcohol lamps and ensure trainings to the lab staff. Check with SCMS
8	Identify solutions to repair or replace the equipment and implement an effective maintenance plan. Check with SCMS maintenance
9	Identify solutions to enable supply of centrifuge machines and ensure trainings to the lab staff. Check with SCMS
10	Identify solutions and sites where TB lab could be implemented Find partners to finance renovation work?
11	Identify solutions to ensure appropriate supply of gloves and always for all sites. Check SCMS, strengthen stock management (planned for 2013)
<b>MEDIUM (6 months) - 12 recommendations</b>	
1	Identify solutions to add 1 more personnel if relevant
2	Design and print bill boards for not smoking/eating in the lab and ensure all sites have it put on the wall, provide little training to lab personnel

3	Design and print bill boards for not storing food in the fridge and ensure all sites have it put on the fridge, provide lab personnel
4	Check with SCMS since each VCT site should have a fridge
5	Identify solutions to repair or replace the equipment and implement an effective maintenance plan. Check with SCMS maintenance
6	Identify solutions to enable supply of centrifuge for haematocrite and ensure trainings to the lab staff. Check with SCMS
7	Identify solutions to equip all the sites with Lab work surface in ceramics
8	Identify solutions to ensure regular access to tap water when possible
9	Identify solutions to ensure regular access to power when possible
10	Identify solutions and sites to have an isolated sample collecting room (ex: use of a screen for small sites where room not possible? and education of health personnel on confidentiality importance)
11	Identify solutions and sites where surface could be increased. Find partners to finance renovation work?

While performing the analysis, it was found out that the results regarding all tests related to HIV were biased by an element which has not been taken into account. Indeed, the 44 sites included in the evaluation are not all supported by SDSH for their HIV services. They are all supported for maternal health but only 23 are supported for their VCT services and 22 for their PMTCT services as described in the table #48 below:

**Table 48: Breakdown of the Sites by Services Offered in the Institutions**

Services	Number of sites supported by MSH and included in the evaluation
Maternal Health	44
Infantile Health	43
VCT	23
PC	11
ARV	7
PMTCT	22
CDT (Center for diagnosis and Treatment of TB)	40
CT (Center of Treatment for TB)	41

The questionnaire used for the evaluation doesn't include a question related to the list of services supported by SDSH preventing the possibility of distinguishing the sites precisely on Epi Info. Moreover, it is difficult to be able to distinguish clearly at the lab level, which lab test is supported by which organization since the situation remains unclear at the different partners' levels (SCMS, PNLT, LNSP, etc.) and since the situation varies from one site to another. Furthermore, when lab requests are given to the lab it is not always mentioned on the request form that it is for an HIV+ patient for example. Therefore consumables funded by one organization, such as gloves for instance by SCMS, may be used for patients which are not in the HIV program. The fact that there are different funders for specific lab inputs for specific patients make the recommendations and actions more difficult. However the results

from this lab evaluation remain a good opportunity to highlight the need of clarification for the lab partners. Consequently a document is currently being written by the Lab program manager in order to define clearly which organization is supporting which lab tests and lab inputs.

Owing to this evaluation, new supervision tools will be designed by the Lab program manager in order to help Departmental technical Advisers of SDSH supporting the sites and according to the sites specificities (size of the sites and services offered). Those tools are in the process of being finalized but should include data related to the new evaluation form for medical laboratories with regard to basic requirements designed by LNSP, which should be available very soon. Specific attention will also be paid on the items included in this Lab evaluation.

Those tools should allow the scoring of the sites enabling the monitoring of the quality improvement for lab services for each site. Scores could further being compared between sites offering similar services or by Department, etc.

## **VII. Discussion**

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The Lab evaluation performed on 44 sites belonging to MSH network allowed the collection of relevant data facilitating the coordination and supervision for the Lab program manager of SDSH / MSH.

This evaluation was also a good opportunity to highlight different areas of improvement aimed to define further actions to strengthen the quality of lab services offered in the institutions.

Among the twelve building blocks defined by WHO for Lab Quality Management System, four building blocks have been partially studied in this evaluation. Those include: "Organization", "Personnel", "Equipment" and facilities and safety.

Owing to the CDC free statistics software Epi Info 7, it was possible to analyze data collected from a 55 questions interview forms. This Epi Info analysis led to the highlight of 8 positive results describing the current situation within the 44 sites included in the lab evaluation: 1 related to "Personnel", 3 for "Organization" and 4 for "Facility and Safety".

Nevertheless, this analysis of the results also highlighted several areas of improvement. One recommendation per area has been defined. The total of recommendations is 36 and is split as follows: 7 for "Personnel", 7 for "Organization", 4 for "Equipment" and 18 for "Facility and Safety".

Some recommendations should be followed by meetings with the concerned partners. For some recommendations, it is suggested to conduct regular follow-ups by the Lab Program Manager and to perform another assessment during the month of March 2013. However, this lab evaluation revealed the need of adjusting the tool. It might be therefore necessary to modify the current tool for future evaluations.

Besides, performing this evaluation enabled to demonstrate the need of clarifications and communications about everyone's responsibilities between partners, including LNSP, PNLT and SCMS.

Owing to this evaluation, a new tool will be designed by the Lab program manager in order to help Departmental technical Advisers of SDSH supporting the sites and should be available in a few weeks. Training to the Departmental Technical Advisers should be organized to explain how to use it.

## Appendices

### Appendix 1: List of 44 Sites Included in the Evaluation

Legend:

MH: Maternal Health

IH: Infantile Health

CDT: Center for Diagnosis and Treatment for TB

CT: Center for Treatment for TB

Institution	Department	MH	IH	VCT	PALLIATIVE CARE	ARV	PMTCT	CDT (TB)	CT (TB)
CAL Marmelade	Artibonite	X	X	X			X	X	
CDI de Raboteau	Artibonite	X	X	X			X	X	
Centre de Santé à lit de Pierre Payen	Artibonite	X	X	X	X	X	X	X	
Centre de Santé Berée de Drouin	Artibonite	X	X						
Centre de Sante de Saint-Michel	Artibonite	X	X	X			X	X	
Centre de Santé K- Soleil	Artibonite	X	X					X	
Hôpital Claire Heureuse	Artibonite	X	X	X	X	X	X	X	
Centre de Sante de Cerca la Source	Centre	X	X					X	
Centre de sante de Maissade	Centre	X	X	X	X		X	X	
Centre de sante de Tilory	Centre	X	X					X	
Centre de Sante Savanette	Centre	X	X					X	
Hopital Notre Dame de la Nativite (HNDN) de Belladère	Centre	X	X					X	
Centre de Santé LEON COICOU	Grand'Anse	X	X					X	
Centre de Santé Saint Joseph des Abricots	Grand'Anse	X	X	X			X	X	

Institution	Department	MH	IH	VCT	PALLIATIVE CARE	ARV	PMTCT	CDT (TB)	CT (TB)
Hôpital de la communauté Dame-Marienne/ AEADMA	Grand'Anse	X	X	X	X	X	X	X	
Hôpital Saint Pierre Corail	Grand'Anse	X	X					X	
CAL Petit-Trou	Nippes	X	X	X			X	X	
HCR l'Azile	Nippes	X	X	X			X	X	
HOPITAL JULES FLEURY	Nippes	X	X	X			X	X	
CAL de Borgne	Nord	X	X					X	
CDS de Ranquitte	Nord	X	X					X	
CDS de Saint Raphael	Nord	X	X					X	
CDS La Fossette	Nord	X	X	X	X	X	X	X	
Centre de Sante de Dondon	Nord	X	X					X	
Hôpital Bienfaisance de Pignon	Nord	X	X	X	X	X	X	X	
Hopital Fort St Michel	Nord	X	X					X	
CAL de Mombin crochu	Nord'Est	X	X					X	
CENTRE MEDICO SOCIAL DE MONT-ORGANISE	Nord'Est	X	X					X	
CENTRE MEDICO SOCIAL DE OUANAMINTHE	Nord'Est	X	X	X	X	X	X	X	
CSL de Bois de Laurence	Nord'Est	X	X						X
DISPENSAIRE DE DUPITY	Nord'Est	X	X					X	
HOPITAL DEPARTEMENTAL DE FORT-LIBERTE	Nord'Est	X	X	X	X	X	X	X	
Centre de Santé Marie Curie	Nord'Ouest	X	X	X			X	X	
Hôpital Notre Dame des Palmistes	Nord'Ouest	X	X						

Institution	Department	MH	IH	VCT	PALLIATIVE CARE	ARV	PMTCT	CDT (TB)	CT (TB)
Centre de sante de Cornillon	Ouest	X	X					X	
CMS/PPC	Ouest	X	X					X	
CS LUCELIA BONTEMPS	Ouest	X	X	X				X	
FONDEFH Canapé Vert	Ouest	X	X					X	
HOPITAL GRACE CHILDREN	Ouest	X	X	X	X	X	X	X	
CAL de les ANGLAIS	Sud	X	X	X			X	X	
Centre de Sante Lumière	Sud	X	X	X	X		X	X	
CENTRE DE SANTE Me BERNARD (Ile-a-Vache)	Sud	X	X	X			X	X	
HOPITAL DE BONNE FIN	Sud	X	X	X	X		X	X	
Klinique La Fanmi	Sud	X		X					

## Appendix 2: Questionnaire Used for Interviews

### EVALUATION LABORATOIRES

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IDENTIFICATION	
Nom de l'institution	
Date de l'enquête	
Département	
Commune	
Code MSPP	
Nom de l'enquêteur	

Pour sélectionner les réponses, vous pouvez cocher , changer la couleur de la réponse ou surligner.

EQUIPE LABORATOIRE			
	Nom et prénom	Téléphone	Mail
Responsable de laboratoire			
Technologiste 1			
Technologiste 2			
Technologiste 3			
Technologiste 4			
Bascilloscopiste 1			
Bascilloscopiste 2			

TESTS DE LABORATOIRE			
Variables	Types	Questions	Commentaires
DetermineHIV Oraquick HIV ColloidalHIV SDBiolineHIV RPRSyphilis TPHASyphilis PPD CD4	Checkbox	<b>Cochez les tests réalisés au labo (fournis par SCMS):</b> <input type="checkbox"/> Determine HIV <input type="checkbox"/> Oraquick HIV <input type="checkbox"/> Colloidal Gold HIV <input type="checkbox"/> SD Bioline HIV <input type="checkbox"/> RPR syphilis <input type="checkbox"/> TPHA Syphilis <input type="checkbox"/> PPD <input type="checkbox"/> CD4 manuel	
FINGERHIV	Options 0 Tube 1 Finger 3 Les deux	<b>Pour le test de dépistage VIH Determine, précisez la technique de prélèvement utilisée (si 2 personnes utilisent 2 techniques différentes cochez les 2):</b> <input type="checkbox"/> Prélèvement veineux d'un tube de sang <input type="checkbox"/> Fingerprick (bout du doigt) <input type="checkbox"/> Les deux	
FINGERSYPH	Options 0 Tube 1 Finger 3 Les deux	<b>Pour le test de dépistage Syphilis, précisez la technique de prélèvement utilisée (si 2 personnes utilisent 2 techniques différentes cochez les 2):</b> <input type="checkbox"/> Prélèvement veineux d'un tube de sang <input type="checkbox"/> Fingerprick (bout du doigt) <input type="checkbox"/> Les deux	
	Checkbox	<b>Autres tests réalisés au labo :</b> <input type="checkbox"/> Sickling test <input type="checkbox"/> Test de grossesse <input type="checkbox"/> Urine (en bandelettes) <input type="checkbox"/> Urine (microscopie) <input type="checkbox"/> Hémogramme manuel <input type="checkbox"/> ALP/GPT <input type="checkbox"/> AST/GOT <input type="checkbox"/> Créatinine <input type="checkbox"/> HDL <input type="checkbox"/> LDL <input type="checkbox"/> Urée <input type="checkbox"/> Azote de l'urée <input type="checkbox"/> Frottis vaginal <input type="checkbox"/> Goutte pendante <input type="checkbox"/> Selles <input type="checkbox"/> Widal <input type="checkbox"/> Groupe Sanguin <input type="checkbox"/> Glycémie (bandelettes) <input type="checkbox"/> Vitesse de sédimentation <input type="checkbox"/> Test de coagulation <input type="checkbox"/> H. Pylori (test rapide) <input type="checkbox"/> Malaria (lame au Giemsa) <input type="checkbox"/> Malaria (test rapide) – Cochez ci-dessous la marque utilisée <input type="radio"/> Care Test <input type="radio"/> Bioline <input type="radio"/> First Reponse <input type="radio"/> Autres? (Précisez)	

		<input type="checkbox"/> Autres tests? (Précisez)	
RESSOURCES HUMAINES			
Variables	Types	Questions	Commentaires
RESP LABO	Yes / No	Présence d'un responsable laboratoire ? <input type="checkbox"/> Oui <input type="checkbox"/> Non	
LABTECH	Number	Nombre de technologistes :	
Bacilloscopiste	Number	Nombre de bacilloscopistes :	
FORM VIH	Number	Nombre de personnes ayant un besoin <u>urgent</u> ( c'est-à-dire une formation qu'il faudrait organiser en priorité et très prochainement)_en formation de recyclage pour les tests suivants pour : le VIH:	
FORM SYPH	Number	la syphilis :	
FORM TB	Number	les crachats TB :	
FORM PPD	Number	le PPD (test à la tuberculine):	
FORM MALARIA	Number	la malaria (lame):	
FORM SELLES	Number	les selles :	
FORM FV	Number	le frottis vaginal et la goutte pendante :	
FORM SICKLG	Number	le sickling test :	
FORM ABO	Number	le test du groupe sanguin :	
FORM WIDAL	Number	test du Widal :	
		CD4 manuel	

ORGANISATION			
Variables	Types	Questions	Commentaires
SDetermine SOraquick SColloidal SRPR STPHA SPPD SCrachats Smalarialame SmalariaTDR SGrossesse SAutres	Checkbox	<b>Cochez les tests pour lesquels vous avez eu des ruptures de stock au moins de 3 fois entre janvier et juin 2012 :</b> <input type="checkbox"/> Determine HIV <input type="checkbox"/> Oraquick HIV <input type="checkbox"/> Colloidal Gold HIV <input type="checkbox"/> RPR syphilis <input type="checkbox"/> TPHA Syphilis <input type="checkbox"/> PPD <input type="checkbox"/> Réactifs crachats TB <input type="checkbox"/> Réactifs malaria (lame) <input type="checkbox"/> Test rapide malaria <input type="checkbox"/> Test de grossesse <input type="checkbox"/> Autres (précisez)	

		<b>Vous disposez de <u>gants</u> pour faire les techniques de laboratoire</b> <input type="checkbox"/> Oui toujours en quantité suffisante <input type="checkbox"/> Oui mais parfois en quantité insuffisante <input type="checkbox"/> Oui mais toujours en quantité insuffisante <input type="checkbox"/> Non les gants ne sont jamais disponibles	
		<b>Vous disposez de <u>blouses</u> pour faire les techniques de laboratoire</b> <input type="checkbox"/> Oui et en quantité suffisante <input type="checkbox"/> Oui mais en quantité insuffisante <input type="checkbox"/> Non les gants ne sont jamais disponibles	
REGISTRE	Yes/No	<b>Le laboratoire dispose d'un registre principal* regroupant tous les tests effectués pour tous les patients</b> <input type="checkbox"/> Oui <input type="checkbox"/> Non  <i>*Registre principal : un registre principal est un registre regroupant les informations sur TOUS les tests effectués au laboratoire (date, nom du patient, type d'échantillon comme urine ou sang par exemple, les tests à effectuer et les résultats).</i>	
NBREG	Number	<b>Nombre total de registres différents :</b>	

EQUIPEMENTS			
Variables	Types	Questions	Commentaires
SYSMEX	Options 0 Oui 1 Oui mais non fctel 2 non	<b>Le laboratoire dispose d'une machine Sysmex (automate pour faire l'hémogramme)</b> <input type="checkbox"/> Oui <input type="checkbox"/> Oui mais non fonctionnel <input type="checkbox"/> Non	
REFLOTRON	Options 0 Oui 1 Oui mais non fctel 2 non	<b>Le laboratoire dispose d'une machine Reflotron (automate pour les tests de chimie tels que ALT, AST, Créatinine)</b> <input type="checkbox"/> Oui <input type="checkbox"/> Oui mais non fonctionnel <input type="checkbox"/> Non	
CENTRI	Options 0 Oui 1 Oui mais non fctel 2 non	<b>Le laboratoire dispose d'une centrifugeuse pour tubes de sang</b> <input type="checkbox"/> Oui <input type="checkbox"/> Oui mais non fonctionnel <input type="checkbox"/> Non	
CAPILLR	Options 0 Oui 1 Oui mais non fctel 2 non	<b>Le laboratoire dispose d'une centrifugeuse pour capillaires à hémocrite</b> <input type="checkbox"/> Oui <input type="checkbox"/> Oui mais non fonctionnel <input type="checkbox"/> Non	
FLAM	Options 0 Oui	<b>Le laboratoire dispose d'un bec bunsen ou d'une lampe à alcool pour la technique des crachats Tb ?</b>	

	1 Oui mais non fonctionnel 2 non	<input type="checkbox"/> Oui <input type="checkbox"/> Oui mais non fonctionnel <input type="checkbox"/> Non	
LUPS LFRIGO LBOMBO LHERMO LMICRO  LROTA LSPECTRO LBM LCENTRIFUG LCOMPTRLAB1 LCOMPTRLAB2  LHEMATIM LLAMELL LMIXR LTIMR  LVORTX LAGGLU LAUTRES	Number	Indiquez le nombre d'équipements <u>disponibles</u> au laboratoire <b>UPS pour Automates :</b> <b>Réfrigérateur :</b> <b>Bombonnes de gaz du réfrigérateur :</b> <b>Thermomètre de Salle :</b> <b>Microscope :</b> <b>Rotateur pour tests RPR :</b> <b>Spectrophotomètre :</b> <b>Bain Marie :</b> <b>Centrifugeuse pour tube de sang :</b> <b>Compteur de Labo 1 touche (compteur pour cellules pour hématocrite) :</b> <b>Compteur de Labo 5 touches (compteur pour lymphocytes, basophile, etc pour faire la formule sanguine):</b> <b>Hématimètre :</b> <b>Lamelle plane pour Hématimètre :</b> <b>Mixeur de Spécimen/Rocker (roue pour mettre les tubes et mélanger le sang) :</b> <b>Minuteur- Timer :</b> <b>Vortex :</b> <b>Plaque pour visualiser l'agglutination:</b> <b>Grille pour la coloration Giemsa :</b> <b>Grille pour la coloration crachats Tb (si différente de celle pour le Giemsa):</b>	
FUPS FFRIGO FBOMBO FHERMO FMICRO  FROTA FSPECTRO FBM FCENTRIFUG FCOMPTRLAB1 FCOMPTRLAB2  FHEMATIM FLAMELL FMIXR FTIMR  FVORTX FAGGLU FAUTRES		Indiquez le nombre d'équipements <u>disponibles et fonctionnels</u> ( <i>c'est-à-dire qui peuvent ne posent pas de problème lors de l'utilisation</i> ) au laboratoire <b>UPS pour Automates :</b> <b>Réfrigérateur :</b> <b>Bombonnes de gaz du réfrigérateur :</b> <b>Thermomètre de Salle :</b> <b>Microscope :</b> <b>Rotateur pour tests RPR :</b> <b>Spectrophotomètre :</b> <b>Bain Marie :</b> <b>Centrifugeuse pour tube de sang :</b> <b>Compteur de Labo 1 touche (compteur pour cellules pour hématocrite) :</b> <b>Compteur de Labo 5 touches (compteur pour lymphocytes, basophile, etc pour faire la formule sanguine):</b> <b>Hématimètre :</b> <b>Lamelle plane pour Hématimètre :</b> <b>Mixeur de Spécimen/Rocker (roue pour mettre les tubes et mélanger le sang) :</b> <b>Minuteur- Timer :</b> <b>Vortex :</b> <b>Plaque pour visualiser l'agglutination:</b> <b>Grille pour la coloration Giemsa :</b> <b>Grille pour la coloration crachats Tb (si différente de celle pour le Giemsa):</b>	
DCANAR	Options 0 1	Le site dispose de respirateur FFP2 (masque de protection avec un bec en forme de canard) pour les technologistes de laboratoire pour la technique des crachats Tb :	

	2 3	<input type="checkbox"/> Oui et ils sont toujours disponibles <input type="checkbox"/> Oui mais pas toujours disponibles <input type="checkbox"/> Non <input type="checkbox"/> Ne sait pas <input type="checkbox"/> Non applicable car le labo ne fait pas les crachats Tb	
UCANAR	Options 0 1 2 3 4 5 6	<b>Les technologistes réalisant la technique des crachats Tb portent un respirateur FFP2 (masque de protection avec un bec en forme de canard) lorsqu'ils réalisent le frottis. (Cochez une seule réponse)</b> <input type="checkbox"/> Oui tous les techniciens portent un masque <u>et à chaque fois</u> qu'ils font la technique <input type="checkbox"/> Oui tous les techniciens portent un masque <u>mais pas à</u> chaque fois qu'ils font la technique <input type="checkbox"/> Seuls certains techniciens portent un masque <u>et à chaque fois</u> qu'ils font la technique <input type="checkbox"/> Seuls certains techniciens portent un masque <u>mais pas à chaque fois</u> qu'ils font la technique <input type="checkbox"/> Aucun technicien ne porte un masque <input type="checkbox"/> Ne sait pas <input type="checkbox"/> Non applicable car le labo ne fait pas les crachats Tb	

LOCAUX			
Variables	Types	Questions	Commentaires
CERAM	Options 0 1 2 3	<b>La ou les paillasses sont en :</b> <input type="checkbox"/> Toutes en bois ou métal <input type="checkbox"/> Toutes en céramique <input type="checkbox"/> Certaines en bois ou métal et céramique pour d'autres <input type="checkbox"/> Autres (précisez)	
EAU	Options 0 1 2	<b>L'eau au robinet est disponible</b> <input type="checkbox"/> Toujours <input type="checkbox"/> De façon irrégulière <input type="checkbox"/> jamais <input type="checkbox"/> NSP	
ELEC	Options 0 1 2 3	<b>La source en <u>électricité</u> est :</b> <input type="checkbox"/> Toujours disponible sans coupure <input type="checkbox"/> Le plus souvent disponible mais avec quelques coupures <input type="checkbox"/> Coupures fréquentes <input type="checkbox"/> Jamais disponible <input type="checkbox"/> Ne sait pas	
SALLE	YES/No	<b>La salle de prélèvement est une salle à part isolée du reste du laboratoire</b> <input type="checkbox"/> Oui <input type="checkbox"/> Non	
SUPERF	Number	<b>Quelle est la superficie approximative totale du laboratoire ?</b> <i>(Indiquez largeur x longueur et l'unité utilisée pieds ou mètres)</i>	

FROTTIS	Options 0 1 2 3 4	<p><b>L'étalement du frottis et la coloration des crachats de Tb sont faits dans une salle à part spécifiquement dédié à cela. (Cochez une seule réponse)</b></p> <p><input type="checkbox"/> Oui l'étalement et la coloration sont faits dans un laboratoire spécifique uniquement dédié à cela</p> <p><input type="checkbox"/> Non l'étalement et la coloration sont faits dans le laboratoire* principal du site</p> <p><input type="checkbox"/> Non l'étalement est fait dehors à un emplacement spécifique et la coloration est faite dans le laboratoire principal du site</p> <p><input type="checkbox"/> Non l'étalement et la coloration sont faits dehors à un emplacement spécifique</p> <p><input type="checkbox"/> Autres (précisez)</p> <p><input type="checkbox"/> Non applicable car le labo ne fait pas les crachats Tb</p> <p><i>* Laboratoire principal : le laboratoire principal est le laboratoire d'analyses médicales de l'institution où tous les tests sont faits tels que la glycémie, l'urine, le test de grossesse, etc.</i></p>	
POUBTB	Options 0 1 2 3	<p><b>Le laboratoire dispose d'une poubelle <u>spécifique à couvercle et à pieds</u> dédiée uniquement aux <u>déchets contaminés dus à la technique des crachats Tb</u> (cochez une seule réponse)</b></p> <p><input type="checkbox"/> Oui il y a une poubelle à couvercle et à pieds spécifique et uniquement dédiée aux déchets contaminés dus à la technique des crachats Tb</p> <p><input type="checkbox"/> Oui, il y a une poubelle spécifique et uniquement dédiée aux déchets contaminés dus à la technique des crachats Tb mais pas de couvercle</p> <p><input type="checkbox"/> Oui il y a une poubelle spécifique et uniquement dédiée aux déchets contaminés dus à la technique des crachats Tb à couvercle mais pas à pieds</p> <p><input type="checkbox"/> Non il n'y a pas de poubelle spécifique et uniquement dédiée aux déchets contaminés dus à la technique des crachats Tb</p> <p><input type="checkbox"/> Non applicable car le labo ne fait pas les crachats Tb</p>	

GESTION DES DECHETS			
LABORATOIRE			
Variables	Types	Questions	Commentaires
GDCONTA	Options 0 1 2	<p><b>Le laboratoire dispose d'une poubelle spécifique pour les <u>déchets contaminés</u></b></p> <p><input type="checkbox"/> Oui et elle est clairement identifiée</p> <p><input type="checkbox"/> Oui mais elle n'est pas clairement identifiée</p> <p><input type="checkbox"/> Non pas de poubelle spécifique pour les déchets contaminés</p>	
GDPBCONTA	Options 0 1 2 3	<p><b>Cette poubelle pour <u>déchets contaminés</u> est</b></p> <p><input type="checkbox"/> à couvercle</p> <p><input type="checkbox"/> à couvercle et à pied</p> <p><input type="checkbox"/> sans couvercle</p> <p><input type="checkbox"/> il n'y a pas de poubelles spécifiques pour déchets contaminés</p>	

GDPBCONTA2	Options 0 1 2	<b>Le laboratoire dispose d'une <u>seconde</u> poubelle spécifique pour les déchets non contaminés</b> <input type="checkbox"/> Oui et elle est clairement identifiée <input type="checkbox"/> Oui mais elle n'est pas clairement identifiée <input type="checkbox"/> Non pas de poubelle spécifique pour les déchets non contaminés	
BSECU	Options 0 1 2 3 4	<b>Le laboratoire dispose de boîtes de biosécurité en quantité</b> <input type="checkbox"/> Toujours suffisante <input type="checkbox"/> Parfois insuffisante <input type="checkbox"/> Toujours insuffisante <input type="checkbox"/> Le laboratoire n'utilise pas les boîtes de biosécurité <input type="checkbox"/> Ne sait pas	
LABNETT	Options 0 1 2 3	<b>Le laboratoire est nettoyé</b> <input type="checkbox"/> 2 fois par jour <input type="checkbox"/> 1 fois par jour <input type="checkbox"/> moins d'une fois par jour <input type="checkbox"/> Ne sait pas	
MENAGLAB	Options 0 1 2 3	<b>Le laboratoire est nettoyé par</b> <input type="checkbox"/> le personnel de laboratoire <input type="checkbox"/> le personnel de ménage <input type="checkbox"/> ne sait pas <input type="checkbox"/> Autres (précisez)	
PRODNETTLAB	Options 0 1 2 3 4 5	<b>Le laboratoire est nettoyé avec</b> <input type="checkbox"/> de l'eau <input type="checkbox"/> de l'eau et du savon <input type="checkbox"/> de l'eau et du chlore <input type="checkbox"/> n'est pas nettoyé <input type="checkbox"/> Autres (précisez) <input type="checkbox"/> Ne sait pas	
FNETTGD	Options 0 1 2 3	<b>Le personnel en charge du nettoyage du laboratoire a été formé sur la manipulation des déchets du laboratoire</b> <input type="checkbox"/> Oui <input type="checkbox"/> Non <input type="checkbox"/> Non applicable car labo non nettoyé <input type="checkbox"/> ne sait pas	
PROTECNETT	Options 0 2 3 4 5 6	<b>Le personnel en charge du nettoyage du laboratoire est équipé de (plusieurs choix possibles)</b> <input type="checkbox"/> Bottes ou chaussures fermées <input type="checkbox"/> Gants épais <input type="checkbox"/> Blouse <input type="checkbox"/> Masque <input type="checkbox"/> Lunettes protectrices <input type="checkbox"/> Non applicable car labo non nettoyé <input type="checkbox"/> Autres (précisez)	
COULRPB	Yes/No	<b>Les sacs poubelle contenant les déchets contaminés sont d'une couleur bien spécifique</b> <input type="checkbox"/> Oui <input type="checkbox"/> Non  <i>Remarque : si la réponse est oui, cela signifie qu'il y a des sacs poubelle de 2 couleurs dans le labo, une couleur pour les déchets contaminés (rouge le plus souvent) et une autre couleur pour les déchets non contaminés.</i>	

AIGUIL	YES/NO	<b>Est-ce que les aiguilles et objets piquants / tranchants sont jetés dans une boîte spécifique telle que boîte de sécurité ?</b> <input type="checkbox"/> Oui <input type="checkbox"/> Non	
CHIMIQ	YES/NO	<b>Certains déchets sont décontaminés chimiquement par du chlore avant d'être détruits ?</b> <input type="checkbox"/> Oui <input type="checkbox"/> Non Si oui précisez quels types de déchets et la procédure :	
DESTRUC	Options 0 1 2 3 4 5 6 7	<b>La destruction des déchets du laboratoire se fait par</b> <input type="checkbox"/> Une société extérieure qui vient récupérer les déchets régulièrement <input type="checkbox"/> Incinération sur le site <input type="checkbox"/> Incinération sur un autre site <input type="checkbox"/> Enfouissement sur le site dans un lieu isolé et à moins de 5m des bâtiments du site <input type="checkbox"/> Enfouissement sur le site dans un lieu isolé et à plus que 5m des bâtiments du site <input type="checkbox"/> Les déchets ne sont pas détruits mais jetés avec les déchets ménagers normaux <input type="checkbox"/> Ne sait pas <input type="checkbox"/> Autres (précisez)	

**Est-ce qu'il y a d'autres problèmes que vous rencontrez dans le cadre de votre travail en laboratoire ?**

*Cette partie du questionnaire doit être faite à partir des observations de l'enquêteur, c'est-à-dire que ces questions ne doivent pas être posées au personnel. L'enquêteur doit observer discrètement ce qu'il se passe au laboratoire et répondre lui-même aux questions ci-dessous :*

ATTITUDE			
Variables	Types	Questions	Commentaires
BLOUS	Yes/No	<b>Les techniciens portent une blouse de laboratoire ou une veste de laboratoire</b> <input type="checkbox"/> Oui tous les techniciens <input type="checkbox"/> Oui certains <input type="checkbox"/> Non aucun	
GANT	Yes/No	<b>Les techniciens utilisent des gants pour effectuer les tests</b> <input type="checkbox"/> Oui tous les techniciens <input type="checkbox"/> Oui certains <input type="checkbox"/> Non aucun	
MANG	Yes/No	<b>Dans le laboratoire, vous avez vu certains techniciens (cochez seulement si c'est vrai)</b> <input type="checkbox"/> manger dans le laboratoire <input type="checkbox"/> fumer dans le laboratoire	

PRESENCE	Checkbox 0 1 2	<p><b>Dans le laboratoire, vous avez vu des personnes extérieures au laboratoire qui ne sont pas des patients et qui sont</b> (<i>plusieurs réponses possibles</i>)</p> <input type="checkbox"/> un adulte appartenant à l'entourage d'un technicien (mari, frère, mère, ami, etc) <input type="checkbox"/> enfant d'un technicien ou de l'entourage du technicien ou d'un autre membre du personnel <input type="checkbox"/> autres (Précisez) <input type="checkbox"/> Non je n'ai pas vu de personnes extérieures dans le laboratoire	
NOURRI	Yes/no	<p><b>Dans le réfrigérateur du laboratoire, vous avez vu de la nourriture</b></p> <input type="checkbox"/> Oui <input type="checkbox"/> Non <input type="checkbox"/> Non applicable car pas de réfrigérateur ou réfrigérateur non fonctionnel	
MULTIPATIENT	Yes/No	<p><b>Dans le laboratoire, vous avez vu plusieurs patients en même temps dans la salle de prélèvement</b></p> <input type="checkbox"/> Oui <input type="checkbox"/> Non	

## Appendix 3: Print screens of the Epi Info 7 form Designer

Enter - [EVALUATION\Eval]

Open Form Save Print Find New Record 1 of 44 Delete Undelete Line Listing Dashboard Map Edit Form Help

File Edit View Tools Help

Pages

- Eval
  - IDENTIFICATION SITE
  - RH LAB
  - SERVICES LAB
  - EQUIP1 LAB
  - EQUIP2 LAB**
  - GDD LAB
  - ATTITUDE LAB
  - Identification GDD
  - Identification suite GDD
  - Salles GDD
  - Salles 2 GDD
  - Salle 3 GDD
  - Salle 4 GDD
  - Elimination et sterilisation GDD
  - Vêtements et sources eau GDD

Linked Records

Exposed From Exposed To

Unlink Add Exposure... View SNA Graph...

EQUIP2 LAB

Le site dispose de respirateur FPP2 ?

- Oui et tjs dispo
- Oui mais pas tjs dispo
- Non
- Ne sait pas
- NA Crachats non realises

Les technologistes portent un respirateur FPP2?

- Oui tous portent un masque et à chq fois
- Oui tous portent un masque mais pas à chq fois
- Seuls certains portent un masque et à chq fois
- Seuls certains portent un masque mais pas à chq fois
- Aucun technicien ne porte un masque
- Ne sait pas
- NA Crachats non realises

La ou les paillasses sont en :

- Toutes en bois ou métal
- Toutes en céramique
- Certaines bois/métal et d'autres céramique
- Autres

L'eau au robinet est disponible

- Toujours
- Irreguliere
- Jamais
- Ne sait pas

La source en électricité est :

- Toujours disponible sans coupure
- Le plus souvent disponible mais avec quelques coupures
- Coupures fréquentes
- Jamais disponible
- Ne sait pas

Salle de prélèvement isolée?

Yes

Superficie du labo

000

L'étalement du frottis et la coloration des crachats de Tb sont faits dans une salle à part spécifiquement dédié à cela

- Oui étalement et coloration sont faits dans un labo spécifique
- Non étalement et coloration sont faits dans le labo principal
- Non étalement dehors et coloration dans le labo
- Non étalement et coloration sont faits dehors

Poubelle spécifique à couvercle et à pieds dédiée uniquement aux déchets contaminés dus à la technique des crachats Tb ?

- Pblle couvercle et pied
- Pblle sans couvercle
- Pblle couvercle pas a pied

[ Name:Dat\_enq2 ] [ Mask:DD-MM-YYYY ] [ Type:Date ] en-US 7.1.0.6 8/9/2012 CAPS NUM INS

Dashboard

Open Save Save as Data Source: EVALUATION\Eval (44 records)

Defined Variables (0) Data Filters (0)

Frequency

RESP LABO	Frequency	Percent	Cum. Percent	95% CI Lower	95% CI Upper
Yes	38	86.36 %	86.36 %	72.65 %	90.07 %
No	6	13.64 %	100.00 %	5.17 %	21.83 %
<b>TOTAL</b>	<b>44</b>	<b>100.00 %</b>	<b>100.00 %</b>		

Frequency Properties

Frequency of: RESP LABO

Advanced options

1 gadgets 811 fields 100%