

Training on ForLab and Long-Term Forecasting and Supply Planning of HIV and AIDS–Related Lab Commodities in Cameroon: Technical Report

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The SIAPS logo consists of the word "SIAPS" in a bold, green, sans-serif font. To the right of the text is a stylized blue graphic of a person with arms raised in a V-shape, suggesting movement or achievement.

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The goal of the Systems for Improved Access to Pharmaceuticals and Services (SIAPS) Program is to assure the availability of quality pharmaceutical products and effective pharmaceutical services to achieve desired health outcomes. Toward this end, the SIAPS result areas include improving governance, building capacity for pharmaceutical management and services, addressing information needed for decision-making in the pharmaceutical sector, strengthening financing strategies and mechanisms to improve access to medicines, and increasing quality pharmaceutical services.

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CONTENTS

Acronyms and Abbreviations	iv
Executive Summary	v
Background	1
Methodology	3
Conduct In-Brief with SIAPS Country Director, US Government Team, and MoH	3
Review Training Materials and Forecast Data Set	3
Present Workshop Objectives and Agenda and Give an Overview of Lab Quantification to Participants.....	3
Give Participants an Overview of ForLab	3
Review Cameroon Data Set Required to Complete ForLab Import Template	4
Train Participants to Manually Enter Morbidity, Service Statistics, and Consumption Data into ForLab and Generate Results.....	4
Train Participants to Import Data into ForLab	5
Perform Forecast of Lab Commodities Needed for Cameroon HIV Program from 2014 to 2017.....	5
Key Findings	9
Training Outcomes.....	9
Long-Term Forecast Outcomes	9
Forecast Results: Morbidity-Based Method	10
Key Challenges and Recommendations.....	13
Challenges.....	13
Recommendations.....	13
Annex 1: Forecast Quantities from 2014 to 2017	17
CD4 Products	17
Chemistry Products	18
Hematology Products.....	20
Viral Load Products	23
Rapid Test Kits	23
Consumables	24
Annex 2: Lab Commodity Supply Plan from 2014 to 2015	25
CD4 Products	25
Chemistry Products	27
Hematology Products.....	29
Viral Load Products	32
Consumables	33
Rapid Test Kits	34
Annex 3: Workshop Agenda.....	35
Annex 4: List of Participants	39
Annex 5: Debrief to Mission.....	41

ACRONYMS AND ABBREVIATIONS

AIDS	acquired immune deficiency syndrome
AMC	Average Monthly Consumption
ART	antiretroviral treatment
ARV	antiretroviral
CDC	US Centers for Disease Control and Prevention
CENAME	Centrale Nationale d'Approvisionnement en Médicaments et Consommables Médicaux Essentiels
CHAI	Clinton Health Access Initiative
CNLS	Comité National de Lutte contre le Sida (National AIDS Control Program)
EID	early infant diagnosis
ESTHER	Ensemble pour une Solidarité Thérapeutique Hospitalière en Réseau
Global Fund	Global Fund to Fight AIDS, Tuberculosis and Malaria
HIV	human immunodeficiency virus
MoH	Ministry of Health
MOS	Month of Stock
NACP	National AIDS Control Program
NGO	Non-governmental Organization
PEPFAR	US President's Emergency Plan for AIDS Relief
PMTCT	prevention of mother-to-child transmission
RTK	rapid test kit
SIAPS	Systems for Improved Access to Pharmaceuticals and Services
USAID	US Agency for International Development
USD	US dollar

EXECUTIVE SUMMARY

A middle-income country in Central Africa, Cameroon had an HIV prevalence of 4.3% in 2011 in the general population 15–49 years of age (2011 DHS). The number of HIV patients on antiretroviral treatment (ART) has grown from a few hundred in 2001 to 78,000 at the end of 2009 and to 131,531 at the end of 2013.

The goal of the Ministry of Health (MoH), along with National AIDS Control Program (Comité National de Lutte contre le Sida; CNLS), US Centers for Disease Control and Prevention/US President's Emergency Plan for AIDS Relief (CDC/PEPFAR), US Agency for International Development (USAID)/PEPFAR, and the Centrale Nationale d'Approvisionnement en Médicaments et Consommables Médicaux Essentiels (CENAME) in Cameroon is to scale up prevention and comprehensive HIV and AIDS care and treatment. To achieve this goal, the MoH has identified the need to improve the current technical knowledge of quantification of HIV and AIDS commodities, specifically laboratory products.

The USAID Mission in Cameroon has requested that the Systems for Improved Access to Pharmaceuticals and Services (SIAPS) Program provide technical assistance to Cameroon to strengthen coordination for quantification with key partners involved in supply chain management to ensure an uninterrupted supply chain for HIV and AIDS commodities through a consolidated and coordinated quantification mechanism.

To ensure continuity of supply of laboratory commodities, CNLS identified the need to carry out a national forecast and develop a procurement plan for the subsequent mobilization of resources required to pay for the country's testing needs. A capacity building coupled with a quantification exercise was therefore undertaken for 20 participants who were members of National Quantification Committee as part of the activities planned to accomplish the MoH's goal. The training exercise set the stage for the establishment of a national mechanism for regular updates of a national forecast and supply plan for laboratory commodities, which will contribute to ensuring a continuous supply.

The forecast was based on the morbidity method because of lack of service statistics and consumption data, which is not the best method for quantification of laboratory commodities. It will expose Cameroon to risk of waste and expiries if assumptions used are not respected.

Using the current testing algorithm, four years' forecasts were developed, and it was estimated that USD 63,114,948 would be needed for the country's testing needs for January 1, 2014, to December 31, 2017. A two-year supply plan was developed and estimated at USD 23,771,830, separated into four quarterly deliveries (November 2014, February 2015, May 2015, and August 2015).

During the quantification exercise, a need to improve data management was noted, which could reduce the number of assumptions required to complete the quantification exercise.

BACKGROUND

A middle-income Central African country, Cameroon had an HIV prevalence of 4.3% in 2011 in the general population 15–49 years of age (2011 DHS). The number of HIV patients on ART has grown from a few hundred in 2001 to 78,000 at the end of 2009, and to 131,531 at the end of 2013.

At national level, the needs for antiretrovirals (ARVs) and other HIV and AIDS products, including laboratory commodities, have significantly increased over the years as a consequence of national guidelines, objectives, and CNLS strategy to increase diagnostic demand.

However, deficiencies were noted in the management of laboratory commodities, including unfamiliarity of laboratory personnel with the laboratory logistics management system and absence or misuse of reporting tools. The laboratory information system, laboratory logistics management system, and Asset Management System for labs are globally characterized by an inability to provide a structured way to produce timely data for the beneficiaries of laboratory services to anticipate stock-outs, provide forecasting needs, and maintain adequate supplies.

The USAID Mission in Cameroon has requested that SIAPS provide technical assistance to Cameroon to strengthen coordination for quantification with key partners involved in supply chain management to ensure uninterrupted supply chain for HIV and AIDS commodities through consolidated and coordinated quantification mechanism.

During years 1 and 2, SIAPS has been working closely with CNLS in Cameroon to establish a coordinated mechanism for quantification, procurement, and distribution to minimize the number of stock-out episodes that occurred in the country since about July and August 2012. With USD 288.3 million from the New Funding Model provided by the Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund), Cameroon will be able to secure more funding for the procurement of HIV and AIDS commodities for 2014 and 2015. In addition, the government of Cameroon has secured USD 20 million in 2014 for the procurement of HIV and AIDS commodities.

During 2014, SIAPS is working with the CNLS, the MoH's Division of Pharmacy, Medicines, and Laboratory (Direction de la Pharmacie, du Médicament et des Laboratoires), and partners such as ESTHER (Ensemble pour une Solidarité Thérapeutique Hospitalière en Réseau) and the Clinton Health Access Initiative (CHAI) to strengthen coordination for quantification (forecasting and supply planning) of HIV and AIDS commodities, including structure, procedures, specific activities, tools, and defined roles and responsibilities of members of the coordination system (*Sous cellule de quantification des intrants VIH/SIDA*). SIAPS will provide mentorship and technical assistance (TA) to establish an effective mechanism for coordination of quantification, as well as to address monitoring of HIV and AIDS commodity stock.

METHODOLOGY

Conduct In-Brief with SIAPS Country Director, US Government Team, and MoH

Initial in-brief was conducted on Thursday, April 24, 2014, with the country project director, Gege Buki; the senior technical advisor, Aline Kane; and the technical advisor, Yves Kaptue. The meeting discussed expected outcomes of the short-term technical assistance, expectations, and pretrip and country-level preparations; it was evident that the pretrip and country preparations had been going on and all indicators had been met except Cameroon data collection, which faced some issues. However, some adjustments to the schedule (involvement of MoH and partners) needed to be finalized.

Review Training Materials and Forecast Data Set

Prior to in-country travel, the TA provider developed training materials, including PowerPoint presentations on quantification principles, background, and application of the ForLab tool. Other materials developed were the training curriculum, participants' workbook, data template, exercises, and pre- and post-tests. While in country, the TA provider reviewed these materials with the country team and implemented changes based on country recommendations of needs and appropriateness. In addition, the materials were translated into French and further reviewed for context and accuracy. The reviews and adjustments of content were to ensure that developed training materials are appropriate to the intended audience.

Present Workshop Objectives and Agenda and Give an Overview of Lab Quantification to Participants

The ForLab training started on Monday, April 28, 2014, at Yaoundé in the Mont Fébé Hotel near the Management Sciences for Health office. The workshop was opened by Dr. Gege Buki, who asked each participant to introduce himself or herself and presented the workshop objectives and agenda. All participants present at the opening ceremony were pretested to assess their background in lab quantification.

Then the TA provider made several presentations focused on lab quantification, review of lab quantification concepts; review of lab forecasting methodologies; issues and considerations in forecasting for laboratory commodities; and data collection, organization, analysis, and adjustment for lab quantification. He emphasized using at least two methodologies whenever possible for lab quantification and comparing forecast results. Morbidity methodology is not the best for lab quantification for an existing program because many challenges can affect lab service delivery (equipment down, service capacity, short shelf life of reagents, etc.). The service statistics method is the best one because it gives the best picture of real diagnostic capacity.

Give Participants an Overview of ForLab

In the afternoon of the first day, the ForLab training started with navigation of the tool. In this session, participants were taken through the various components of the tool as well as the expected output, data requirements, and application. To ensure an interactive process, participants followed the demonstration on their computers to make sure they could adequately

navigate through the tool. The objective of this session was to help participants update the “program data” component of the tool. The program data is the basic data input of the tool to describe the program, the testing platforms, instrument distribution, site classification, and commodities to be forecast. Once the basic data input to the tool was navigated and completed, the participants are ready to enter different types of data for the respective quantification. Participants generated an Import Template from ForLab to be completed to allow data import into ForLab. The TA provider told participants that the second and third days of the workshop will be focused on Cameroon data analysis and organization.

Review Cameroon Data Set Required to Complete ForLab Import Template

From the second to third day, the team worked on the Cameroon data set. As the basis for the data set, data were used from a recent quantification for ARVs and opportunistic infection medicines. Participants reviewed the list of equipment for CD4, chemistry, hematology, and viral load currently available in each ART site of the 10 regions in Cameroon and discussed sample referral as well. The usage rate for each product had been calculated by the TA provider and was explained to participants. It is the most important part of lab quantification.

Train Participants to Manually Enter Morbidity, Service Statistics, and Consumption Data into ForLab and Generate Results

Day 4 was the climax of the training. During this process, the participants used prepared information from a virtual country—Anyland—to input program data, service data, demographic data, and logistics information that was provided by the TA provider. The significance of this was to build the skills of participants in “manual” data entry of the tool. A critical component of the ForLab tool is the quality of data available for quantification. Different data sources are required to populate the tool in order to generate a multimethod forecast. Another utility of the tool is its multiple data entry techniques. Data can be entered manually or by data entry template. Irrespective of technique used, large amounts of data have to be collected and entered in the tool. In the manual method, data are entered for each instrument, site, testing area, testing group, etc., individually and directly into the tool without aggregation. This is typically a very time-consuming effort that requires more effort and skills in navigating the tool. In contrast, the data entry template, a Microsoft Excel spreadsheet, allows data aggregation to be entered outside the tool for import. The advantage of the template is it allows multiple users to work on the spreadsheet without the need to log into the tool. It also allows continuous data collection and periodic updates without the need to update the tool.

During this training, one data set from virtual country AnyLand was provided to the participants for manual entry and template population. Participants were to use the same data set to produce a multimethod forecast. In the exercise, the data set has a sample referral network. The idea was to have participants work with different testing scenarios that can occur in laboratory programs. In a resource-limited setting, not all sites have the capacity to conduct the wide range of tests required for a laboratory program. For this reason, sample referral networks are developed to ensure that resources are distributed across the network with larger sites supporting peripheral levels. All participants were able to complete the manual data entry and produced multimethod forecast results using the three methodologies; these were reviewed by the TA provider and necessary corrections made. Participants also learned how to read reports and compare results from the three methodologies (see figure 1).

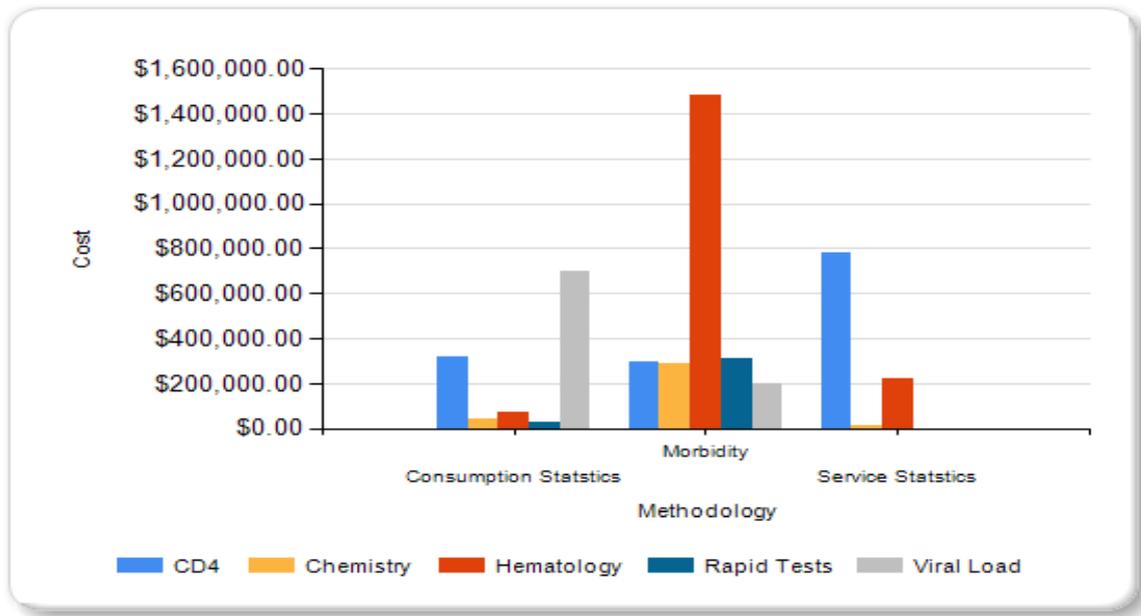


Figure 1. AnyLand forecast comparison

Train Participants to Import Data into ForLab

Having developed working expertise in the use of the tool, participants were now given the import template with same data used for the manual entry described above. The import template was already filled out by TA provider. Participants learned how to import regions, sites, instruments, site instruments, products, test, test product usage rate, ART quantification variables, historical consumptions, and historical service statistics to perform lab quantification using there methodologies.

At the end of this session (day 4), participants have developed a working level of expertise on how to navigate the tool, data requirements, data manipulation, and multiple forecasts using the ForLab tool, and they are ready to perform a long-term forecast with Cameroon data.

Perform Forecast of Lab Commodities Needed for Cameroon HIV Program from 2014 to 2017

Scope of the Forecast

The scope of the forecast was national, covering all programs and funding sources. The commodities to be quantified included all laboratory testing commodities used in all of the analytical systems and test procedures specified in table 1. (See annexes for full list of commodities forecast.) The forecast period and supply plan covers the period January 2014 to December 2017.

Only the morbidity method was used because of lack of service statistics and consumption data.

Table 1. Overview of Available Clinical Tests and Associated Analyzers

Hematology		FlowCytometry (CD4)	Viral Load
1. Hema Screen 18	9. Mindray BC-2300	1. FACSCalibur	1. ABI Prism 7500
2. Abbott CD-1800	10. Sysmex KX-21	2. FACSCount	2. Abbott 2000rt
3. ABX Micro 60	11. Sysmex XT-2000i	3. Partec Cyflow	
4. HumanCount	12. Sysmex XS-500i	4. Guava	
5. Mindray BC-2800	13. URIT 2900	5. PIMA	
6. URIT 3300	14. ABX Pentra 80		
7. Mindray BC-3000	15. QBC autoread	Chemistry	Rapid Test
8. Hycel Celly-70	16. Rayo RT-7600 plus	1. Cobas C311	1. Determine HIV
		2. Cobas C111	2. ImmunoComb HIV
		3. Spectrophotometer	3. KHB Shangai
		4. Reflotron Sprint	

Key Assumptions

For this exercise, the following assumptions were made—

1. Quantification period is January 1, 2014, through December 31, 2017.
2. All the machines are and will remain functional for the quantification period. Sites whose machines are down at any point during the quantification period will be assumed to refer their samples to nearby labs, and reagents will be allocated to these backup labs.
3. All the sites will follow the testing protocol as prescribed in tables 2 and 3.
4. The wastage rate will remain true throughout the quantification period (5% rapid test kits [RTKs], 5% CD4, 5% viral load, 10% hematology, and 10% biochemistry).
5. The total number of ART patients from beginning to end of the quantification period will be 131,531 to 187,975 as shown in table 4.
6. The existing number of patients on pre-ART was missing. This population was estimated with a rate provided by Dr. Kouanfack (Hôpital Central of Yaoundé). According to him, pre-ART patients receiving lab monitoring tests represent 20% of all patients in care (ART patients + pre-ART patients). That being said, the total number of pre-ART patients from beginning to end of the quantification period will be 32,883–46,994, as shown in table 4.
7. All ART and pre-ART patients will be evenly distributed across sites, using the current percentage for patient distribution.
8. The percent of pediatrics used is 4% for the quantification period for all sites.
9. All the sites to which samples are referred will remain functional during the quantification period for CD4, hematology, and chemistry testing.
10. Percentage of repeated tests (10%) will remain true throughout the quantification period.

11. Percentage of symptom-directed tests (2%) will remain true throughout the quantification period.
12. All usage rates and prices indicated will remain true for the quantification period.
13. Attrition rate of 30% will be used for adult and pediatric patients on ART over the course of the year.
14. Attrition rate of 30% will be used for adult and pediatric patients on pre-ART over the course of the year.
15. National HIV prevalence of 4.3% will remain true for the quantification period.
16. Over the course of the year, 25% of adult and pediatric diagnosed HIV-positive patients are lost to follow-up.
17. Over the course of the year, 10% of adult and pediatric patients migrate from pre-ART to treatment.
18. The testing guidelines (current and proposed, which can be seen in tables 2 and 3) will be prescribed as indicated during the quantification period.

Table 2. Testing Guidelines for Adult and Pediatric Patients on ART

Test	Baseline	Month 6	Month 12	Thereafter
CD4	X	X	X	2
ALAT	X	X	X	2
ASAT	X	X	X	2
Creatinine	X	X	X	2
Glucose	X	X	X	2
Hematology	X	X	X	2
Viral load ^a		X	X	1

a. Viral load will be offered to only 30% of ART patients.

Table 3. Testing Guidelines for Adult and Pediatric Patients on Pre-ART

Test	Baseline	Month 6	Month 12	Thereafter
CD4	X	X	X	2

Table 4. Number of ART and Pre-ART Patients during the Quantification Period

Patients	December 2013	December 2014	December 2015	December 2016	December 2017
ART patients	131,531	147,476	156,948	172,462	187,975
Pre-ART patients	32,883	36,869	39,237	43,116	46,994

KEY FINDINGS

Training Outcomes

Modular Training

The use of a modular curriculum to cover the scope of the quantification was intuitive. The first module provided general principles of forecasting and quantification that forms the background information for the second module, which was the application of the ForLab tool in forecasting. Because of this approach, participants were able to relate the principles with the background of the tool, thus making output interpretation easier. Following this training, module 3 includes the development of a supply and procurement plan, which was generated as part of the output of the ForLab tool. The three-module approach gives participants a broad-based understanding of the quantification processes for data collection, data quality, data entry, interpretation, and strategic application of forecasting in a well-rounded health system strengthening approach. This general approach should be emulated in other countries as they build capacity of national stakeholders in forecasting and quantification.

Training Process

The aim of the training was to build capacity on quantification using the ForLab tool. To measure the effectiveness of the training, a pre-test and post-test were administered to a total of 20 participants from CNLS, CENAME, Central Hospital of Yaoundé, Chantal Biya Foundation, Regional Hospitals and blood banks, CDC, CHAI, and ESTHER. Participants have successfully completed two modules on forecasting approach (theory and practice). The average score has gone from 13.63 to 17.85 between pre-test and post-test. Reasons attributed to this high change in knowledge and skills could include usefulness of the training curriculum, types of training materials used, training methodology, and user-friendliness of the tool.

Long-Term Forecast Outcomes

Assessment of Instrument Distribution, Diagnostic Contribution, and Instrument Utilization Rate

Figure 2 shows that the FACSCCount machine, representing 53% of CD4 platform, is contributing to 51% of CD4 testing, but it is underutilized compared with its maximum throughput, which is about 50 tests per day.

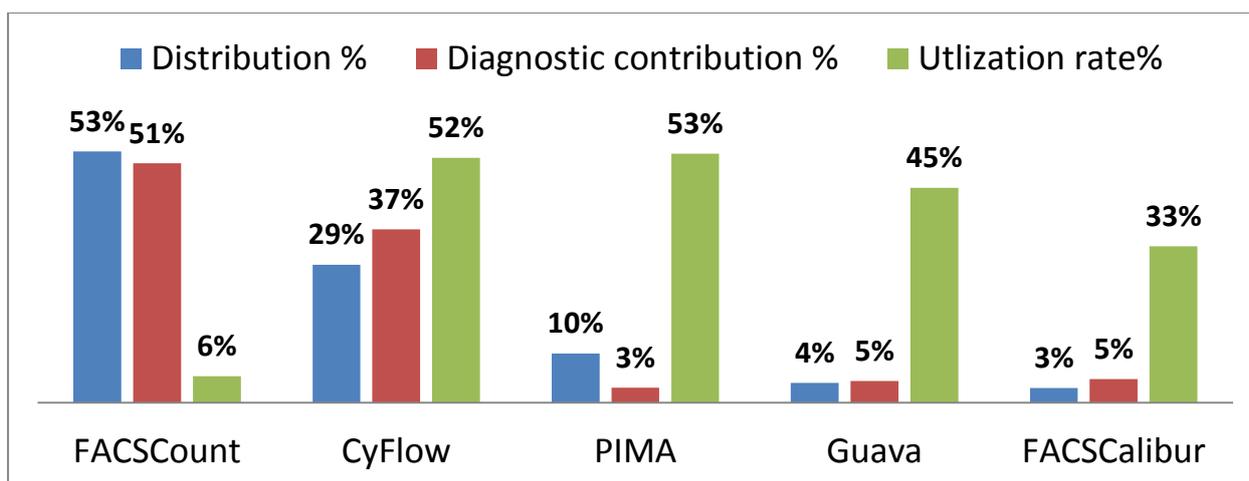


Figure 2. CD4 instrument utilization, diagnostic contribution, and diversity

Figure 3 shows that of 18 hematology machines used to perform hematology tests, only 2, representing 50% of hematology platform, are contributing to 56% of hematology tests.

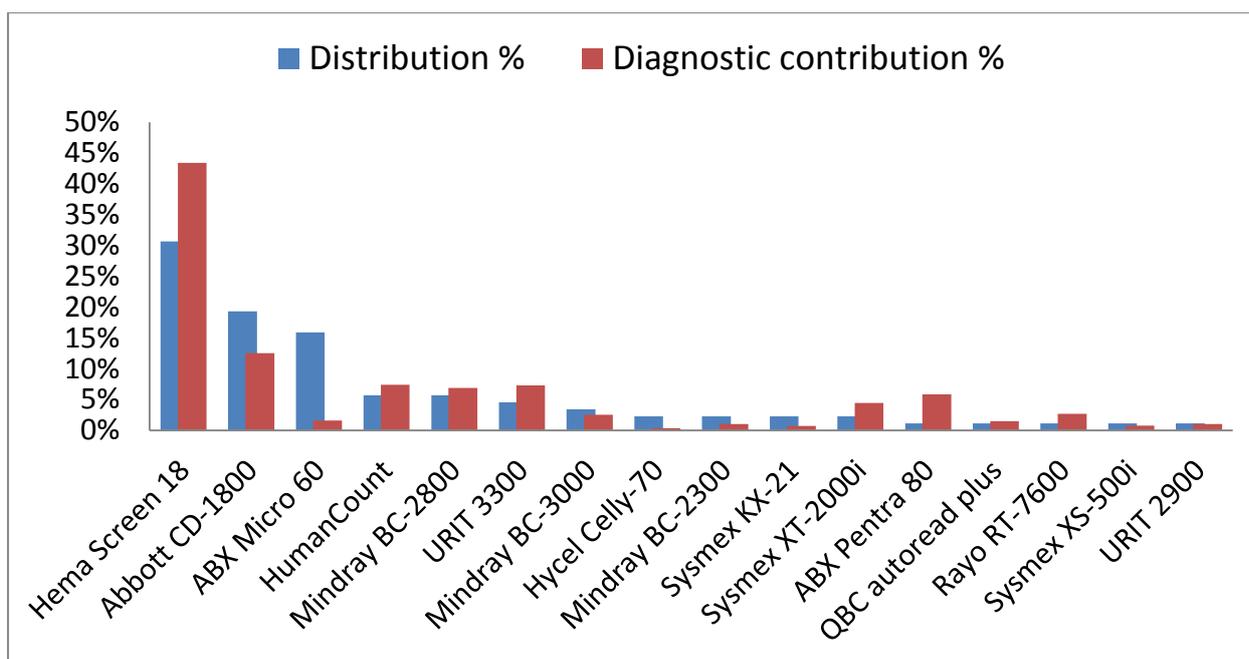


Figure 3. Hematology instrument utilization, diagnostics contribution, and diversity

Forecast Results: Morbidity-Based Method

Table 5 summarizes the total laboratory testing requirements by value, based on the previously listed assumptions for the period between January 1, 2014, and December 31, 2017. The table is broken down by testing areas. The forecasts that were carried out estimated that approximately USD 63,114,948 would be required to meet all of Cameroon's testing

needs for the given forecast period using the current testing algorithms. More details about forecast quantities per testing area are provided in the annex to this report.

Table 5. Total Commodity Cost (without Freight and Other Procurement Fees), USD

Testing area	2014	2015	2016	2017	Total
CD4	5,107,019	5,489,441	5,993,882	6,541,537	23,131,879
Chemistry	478,721	468,328	509,364	556,435	2,012,848
Hematology	532,553	567,399	621,876	678,956	2,400,784
Viral load	2,265,783	2,336,177	2,529,391	2,759,886	9,891,237
RTKs	2,847,740	2,763,440	3,218,120	3,457,640	12,286,940
Consumables	3,085,518	3,043,454	3,496,524	3,765,764	13,391,260
Total	14,317,334	14,668,239	16,369,157	17,760,218	63,114,948

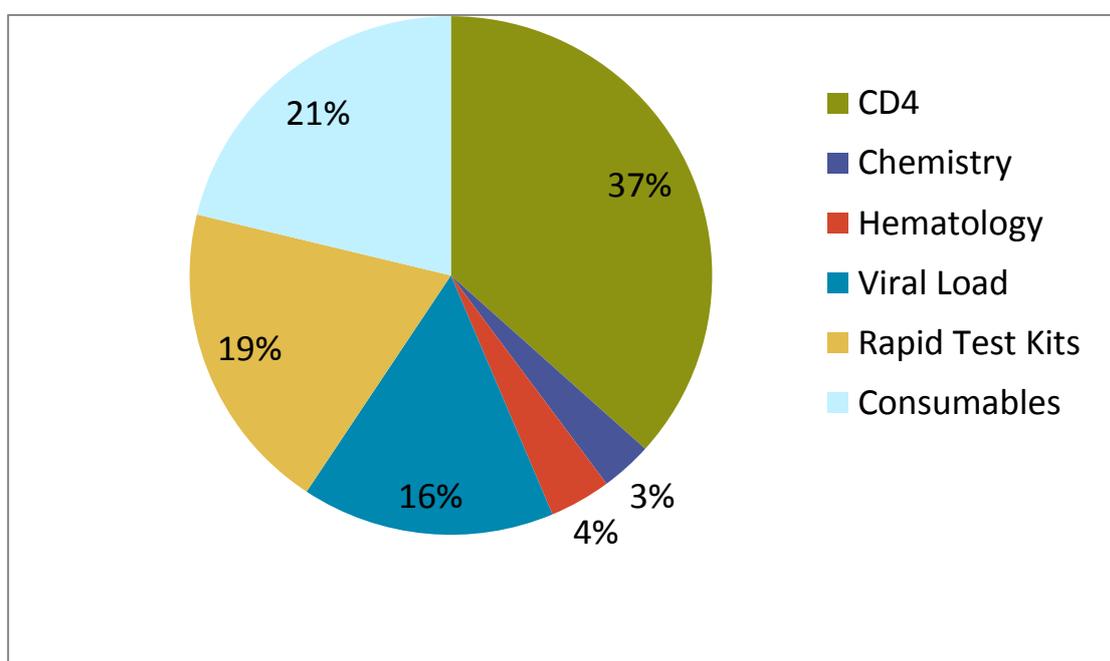


Figure 4. Total cost distribution, 2014–2017

Table 6. Lab Commodity Supply Plan, 2014–2015: Morbidity-Based Method (Including 17% as Freight and Surcharge Fees), USD

Testing Area	Delivery dates				Total
	November 2014	February 2015	May 2015	August 2015	
CD4	4,279,279	1,606,457	1,606,457	1,606,457	9,098,649
Chemistry	366,060	137,684	137,684	137,684	779,114
Hematology	459,728	173,089	173,089	173,089	978,994
Viral Load	1,853,411	695,029	695,029	695,029	3,938,498
RTKs	2,155,234	808,213	808,213	808,213	4,579,871
Consumables	2,050,008	782,147	782,274	782,274	4,396,703
Total	11,163,720	4,202,619	4,202,745	4,202,745	23,771,830

KEY CHALLENGES AND RECOMMENDATIONS

Challenges

The following challenges were faced during the quantification of lab commodities in Cameroon—

- Inadequate coordination between donor agencies and government on equipment donations
- Lack of service contracts for equipment
- Frequent machine breakdowns, especially CD4 and hematology platforms, thereby creating overstock and expiries
- No communication between procurement entity and testing centers
- Gap between clinicians and lab personnel regarding testing protocols
- Poor record keeping—no appropriate tools
- Availability of quality data and accessibility of data
- Failure to regularly send reports to the central level and back to the facility levels
- Failure to share information among key partners to identify common challenges
- Lack of data analysis
- Lack of service statistics data
- Inadequate monitoring and evaluation of lab services

Recommendations

Strategic Positioning of ForLab

With immediate effect, the country should consider adopting the ForLab tool for forecasting needs of laboratory commodities. The flexibility of the tool to conduct multimethod forecasting and to allow updates based on new information to inform scale-up will enhance the country's understanding of its diagnostic landscape, instrument deployment, and scale-up.

The MoH should assume leadership in the rollout and maintenance of the tool across the country. This will enhance stakeholders' acceptance of the tool to inform program decisions. Implementing partner SIAPS should not have oversight responsibility of the tool. However, SIAPS should continue to provide technical support for the maintenance of the tool as and when new versions are released.

This report recommends positioning the tool at CNLS with technical expertise from in-country lab staff. This will enhance ownership of the tool by the various MoH arms for sustainable application in country programs.

USAID and CDC in Cameroon should consider advocating for use of the tool among their implementing partners as the standard forecasting tool for laboratory commodities in an effort to coordinate and inform future work planning processes.

Standardization and Maintenance of Lab Instruments

A standardization process for laboratory instruments should be considered in Cameroon. The process would include all stakeholders involved in the provision of laboratory services (clinical pathologists, lab technologists, donors, program managers, etc.). Standardization of instruments would substantially reduce the procurement cost by reducing the number of laboratory supplies to procure and manage and allow negotiation of appropriate maintenance plans with manufacturers and local vendors. Last, standardization would allow the development of internal and external quality control schemes.

Redesign of a Logistics System for Laboratory Supplies

It is critical to redesign an inventory control system and a logistics management information system (tools and mechanism for collecting and reporting logistics data for decision making) for laboratory supplies, as part of a logistics system. This would allow monitoring the supply chain, resupplying service delivery points based on their consumption and stock on hand, and conducting informed quantification exercises and procurement activities.

Definition of Program Objectives by Site

Considering the variety of laboratory equipment in the country and the diversity of the types of health facilities selected for the ART program, future quantifications would be easier if specific goals were designed for individual sites, simply because different sites at the same level of the health system can have different equipment, making a national approach impossible. This situation forced the team to conduct quantification on a site by site basis.

Physical Inventory of Laboratory Supplies Every Six Months

Before a logistics system that includes a logistics management information system can be put in place, the team recommends a physical inventory of laboratory supplies at CENAME, regional depots, and service delivery levels. This would provide data for future quantification updates and for subsequent procurements.

Review and Update the Quantification

After the quantification of any commodity, it is strongly recommended to review and update the exercise at least every three months. The update process would review and eventually update all assumptions made in the first exercise, especially the number of patients on pre-ART and status of diagnostic instruments.

Furthermore, because only the morbidity method was used, it is critical to closely monitor the use of laboratory supplies in the first three months following this exercise to make necessary

adjustments during the review. This would reduce the possibility of over- or underestimating the forecast.

Revision of Current Health Management Information System Tools to Integrate Lab Data Needed for Quantification

Because absence of service statistics data did not permit a quantification to be done using the service statistics methodology, the quantification committee encourages CNLS to review the current health management information system tools to make sure that minimum data required for lab quantification are routinely collected from service delivery points and reported to regional and central levels.

Strategic Discussion about PIMA Machine, Early Infant Diagnosis, and Viral Load

CNLS has to initiate strategic discussion with all implementing partners (SIAPS, ESTHER, CHAI, National Reference Laboratory, etc.) involved in lab services as well as CDC and USAID to discuss the following—

- Positioning of PIMA machines and their scope: In many countries PIMA machines are deployed at service delivery points for prevention of mother-to-child transmission (PMTCT) to support PMTCT programs, but at same time, other patients who are close to this PMTCT service or center use it to receive their CD4 tests, thereby increasing demand of CD4 for PIMA machines and subsequently reducing the demand of CD4 tests for flow cytometers.
- Early infant diagnosis (EID): Cameroon and most of countries are currently using Roche Amplicor DNA PCR reagents to perform EID testing. This reagent will be discontinued soon. It appears necessary to start the discussion now to find which testing technique to use in the near future.
- Viral load: The target of 40,000 ART patients to receive viral load testing per year according to testing protocol seems unrealistic because of the current platform and human resources available. Discussion is needed to define a better strategy to increase diagnostic capacity from 2014 to 2017.

ANNEX 1: FORECAST QUANTITIES FROM 2014 TO 2017

CD4 Products

Product name	Basic unit	Pack size	Price	Forecast quantities			
				2014	2015	2016	2017
FACS Count CD4 Abs Reagent Kit	Test	50	213	4797	4797	5241	5720
FACS Count Auto CD4/CD4% Reagent Kit	Test	50	350	4797	4797	5241	5720
BD FACS Count-Control Kit	Test	25	180	197	197	215	235
BD FACS Count-FacsClean	Liter	5	38	163	163	177	195
BD FACS Count-FacsRinse	Liter	74	33	30	30	34	39
BD FACS Count-FacsFlow	Liter	20	33	98	98	107	114
Immunotrol, 2x3 mL normal	mL	6	184	957	957	1045	1138
Immunotrol, 2x3 mL pathologic	mL	6	184	957	957	1045	1138
BD FACS Count-Thermal Paper	Roll	1	8	2400	2400	2622	2862
BD TriTest CD3/CD4/CD45 Kit of 50 tests with trucount	Test	50	320	477	477	521	569
BD Calibrite 3 Beads kit of 25 tests	Test	25	160	20	20	22	24
BD FACS Lysing Solution 100 mL	mL	100	200	3	3	3	3
Tubes Plastique Falcon 12x75 pack of 1000 tubes	Tube	1000	220	25	25	27	30
Guava Easy CD4/CD4% Kit of 100 tests	Test	100	350	218	218	238	260
Guava check kit of 50 tests	Test	50	165	9	9	10	11
Guava ICF instrument cleaning fluid bottle of 100 mL	mL	100	22	3	3	3	3
Guava Micro-tubes conical bottom pack of 500	Tube	500	75	44	44	48	52
Partec CD4 abs easy count kit (100 Tests)	Test	100	361	1740	1740	1899	2073
Partec CD4% easy count kit (100 Tests)	Test	100	286	1740	1740	1899	2073
Partec Auto CD4/CD4% easy count kit (100 Tests)	Test	100	450	1740	1740	1899	2073
Count Check Beads green, 50 Tests	Test	50	286	75	75	81	87
Sample Tubes, 3.5 mL (500 pcs.)	Tube	500	93	351	351	384	418
Decontamination Liquid, 250 mL	mL	250	65	351	351	384	418
Cleaning Solution, 250 mL	mL	250	24	351	351	384	418
Sheath Fluid (5L)	Liter	5	29	109	109	120	129
Hypochlorite Solution, 250 mL	mL	250	15	351	351	384	418
CyFlow Thermal Printer paper, roll 5 m	Roll	1	8	1740	1740	1899	2073
PIMA CD4 cartridge Kit, 100 tests/Kit	Test	100	700	153	153	166	182
PIMA standard bead	Kit	1	91	17	17	19	21
PIMA Printer paper I	Roll	10	49	16	16	18	20
Lancette retractable, 2 mm, 200/pack	Lancette	200	32	78	78	84	91

Chemistry Products

Product name	Basic unit	Pack size	Price	Forecast quantities			
				2014	2015	2016	2017
Spectro - Gluocse 200 mL	mL	200	50	1621	1621	1766	1928
Spectro - Creatinine 200 mL	mL	200	50	1621	1621	1766	1928
Spectro - ALT/GPT 200 mL	mL	200	50	1621	1621	1766	1928
Spectro - AST/GOT 200 mL	mL	200	50	1621	1621	1766	1928
Spectro - Control normal 10x5 mL	mL	50	80	218	218	237	260
Spectro - Control pathologic 10x5 mL	mL	50	80	218	218	237	260
Spectro – hemolysis tubes P/500	Tube	500	106	651	651	709	773
Spectro - printer paper pack , roll of 5 m	Roll	1	3	3236	3236	3526	3851
Cobas C111 - Glucose 400 tests	Test	400	34	33	33	35	39
Cobas C111 - Creatinine 400 tests	Test	400	95	33	33	35	39
Cobas C111 - Alanine Aminotransferase (ALT/GPT) 400 tests	Test	400	25	33	33	35	39
Cobas C111 - Aspartate Aminotransferase (AST/GOT) 400 tests	Test	400	25	33	33	35	39
Cobas C111 - Cfas 12x3 mL	mL	36	79	4	4	4	5
Cobas C111 - Precinorm U 4x5 mL	mL	20	39	7	7	7	8
Cobas C111 - Precipath U 4x5 mL	mL	20	39	7	7	7	8
Cobas C111 - Sample cups pack of 4x250 cups	Cup	1000	77	13	13	14	16
Cobas C111 - Sample cups - micro pack of 500 cups	Cup	500	22	26	26	28	31
Cobas C111 - Printer Paper roll of 5 m	Roll	1	9	129	129	140	153
Cobas C111 - Cleaner acid Integra 1 liter	Liter	1	29	18	18	20	22
Cobas C111 - Activator 9x12 mL	mL	108	52	3	3	3	3
Cobas C111 - microcuvettes segment pack of 5000 cuvettes	Cuvette	5000	118	13	13	14	16
Cobas C311 - Glucose 800 tests	Test	800	74	10	10	10	11
Cobas C311 - Creatinine 700 tests	Test	700	33	11	11	12	13
Cobas C311 - Alanine Aminotransferase (ALT/GPT) 500 tests	Test	500	23	15	15	16	18
Cobas C311 - Alanine Aminotransferase (AST/GOT) 500 tests	Test	500	23	15	15	16	18
Cobas C311 - Cfas 12x3 mL	mL	36	94	3	3	3	3
Cobas C311 - Precinorm U 4x5 mL	mL	20	42	4	4	4	5
Cobas C311 - Precipath U 4x5 mL	mL	20	44	4	4	4	5
Cobas C311 - Cuvettes pack of 20x1000 microcuvettes	Cuvette	2000 0	486	1	1	1	1
Cobas C311 - Waste Container pack of 20 rack	Container	20	67	2	2	2	2
Cobas C311 - Cobas Cups pack of 1000 cups	Cup	1000	34	8	8	8	9

Annex 1

Product name	Basic unit	Pack size	Price	Forecast quantities			
				2014	2015	2016	2017
Cobas C311 - Cleaner 1 liter	Liter	1	35	11	11	12	13
Cobas C311 - Deproteinizer 6x21 mL	mL	126	23	2	2	2	2
Cobas C311 - NaCl 9%	Kit	1	26	4	4	4	4
Cobas C311 - NaOH-D, Cobas C	Kit	1	21	4	4	4	4
Cobas C311 - NaOH Basic Wash	Kit	1	45	4	4	4	4
Cobas C311 - Acid Wash solution	Kit	1	69	4	4	4	4
Cobas C311 - Sample Cleaner 1	Kit	1	84	4	4	4	4
Cobas C311 - SMS, Cobas C	Kit	1	32	4	4	4	4
Cobas C311 - SMS/Acid Wash	Kit	1	147	4	4	4	4
Cobas C311 - Hitergent solution	Liter	1	22	11	11	12	13
Reflotron Sprint - Glucose kit 30 tests	Test	30	32	95	95	103	113
Reflotron Sprint - Creatinine kit 30 tests	Test	30	32	95	95	103	113
Reflotron Sprint - GPT kit 30 tests	Test	30	32	95	95	103	113
Reflotron Sprint - GOT kit 30 tests	Test	30	32	95	95	103	113
Reflotron Sprint - Cleaner Check kit 15 tests	Test	15	24	19	19	21	23
Reflotron Sprint - Precinorm U kit of 140 tests	Test	140	39	3	3	3	3
Reflotron Sprint - Precipath U kit of 140 tests	Test	140	58	3	3	3	3
Reflotron Sprint-Printer paper roll of 5 m	Roll	1	8	29	29	31	34

Hematology Products

Product name	Basic unit	Pack size	Price	Forecast quantities			
				2014	2015	2016	2017
Cell Dyn 1800 - Diluent 20 L	L	20	114	98	98	108	119
Cell Dyn 1800 - Cyanide free Lytic Lyse 4 L	L	4	144	11	11	12	14
Cell Dyn 1800 - Detergent 20 L	L	20	26	23	23	24	26
Cell Dyn 1800 - Enzymatic Cleaner Conc. 2x15 mL	mL	30	26	1278	1278	1394	1521
Cell Dyn 1800 - Control N, H, L	Kit	1	129	101	101	111	121
ABX Micro 60 - Minidil LMG 10 L	L	10	80	26	26	27	32
ABX Micro 60 - Alphalyse 360 mL	mL	360	95	12	12	14	15
ABX Micro 60 - Miniclean 1 L	L	1	114	50	50	54	60
ABX Micro 60 - Minoclair 0.5 L	mL	500	114	98	98	107	118
ABX Micro 60 - Minotrol 16 Tri-Level Control 3x2.5mL	Kit	1	129	18	18	19	20
ABX Micro 60 - Minocal Calibrator 2x2.5 mL	Kit	1	129	18	18	19	20
ABX Pentra 80 - Diluent 20 L	L	20	114	45	45	49	54
ABX Pentra 80 - Lysebio 0.4 L	mL	400	144	37	37	40	44
ABX Pentra 80 - Eosinofix 1 L	L	1	144	15	15	16	18
ABX Pentra 80 - Basolyse II 1 L	L	1	144	15	15	16	18
ABX Pentra 80 - Cleaner 1 L	L	1	114	179	179	196	214
ABX Pentra 80 - Minoclair 0.5 L	mL	500	114	358	358	391	427
ABX Pentra 80 - Diffrol Tri-Level Control 3x3 mL	Kit	1	129	45	45	49	54
ABX Pentra 80 - Minocal Calibrator 2x2.5 mL	Kit	1	129	45	45	49	54
HumaCount - Diluent 20 L	L	20	114	57	57	63	69
HumaCount - Lyse CF 1 L	L	2	114	11	11	12	13
HumaCount - Cleaner 1 L	L	2	145	113	113	124	136
HumaCount - Control level 1,2,3 3x2.5 mL	Kit	1	129	60	60	66	72
Mindray BC-2800 - Diluent 20 L	L	20	114	55	55	60	65
Mindray BC-2800 - Lyse 1 L	L	2	114	10	10	11	13
Mindray BC-2800 - Cleaner 1 L	L	2	145	107	107	117	127
Mindray BC-2800 - Control level H,N,L 3x2.5 mL	Kit	1	129	55	55	60	65
URIT-3300 - Diluent 20 L	L	20	114	57	57	63	68
URIT-3300 - Lyse 1 L	L	2	114	11	11	12	12
URIT-3300 - Cleaner 1 L	L	2	145	113	113	124	135

Annex I

Product name	Basic unit	Pack size	Price	Forecast quantities			
				2014	2015	2016	2017
URIT-3300 - Control level H,N,L 3x2.5 mL	Kit	1	129	59	59	64	69
URIT-2900 - Diluent 20 L	L	20	114	8	8	9	10
URIT-2900 - Lyse 1 L	L	2	114	2	2	2	2
URIT-2900 - Cleaner 1 L	L	2	145	16	16	18	20
URIT-2900 - Control level H,N,L 3x2.5 mL	Kit	1	129	8	8	9	10
Mindray BC-3000 - Diluent 20 L	L	20	114	20	20	22	25
Mindray BC-3000 - Lyse 1 L	L	2	114	5	5	5	6
Mindray BC-3000 - Cleaner 1 L	L	2	145	40	40	43	48
Mindray BC-3000 - Control level H,N,L 3x2.5 mL	Kit	1	129	24	24	26	28
Hycel Celly 70 - Diluent 20 L	L	20	114	3	3	3	4
Hycel Celly 70 - Lyse 1 L	L	1	114	1	1	1	1
Hycel Celly 70 - Rinse 20 L	L	20	114	1	1	1	1
Hycel Celly 70 - Cleaner 1 L	L	1	145	11	11	12	13
Hycel Celly 70 - Control level H,N,L 3x2.5 mL	Kit	1	129	4	4	4	4
Mindray BC-2300 - Diluent 20 L	L	20	114	8	8	9	10
Mindray BC-2300 - Lyse 1 L	L	2	114	2	2	2	2
Mindray BC-2300 - Cleaner 1 L	L	2	145	16	16	17	19
Mindray BC-2300 - Control level H,N,L 3x2.5 mL	Kit	1	129	8	8	9	10
Sysmex Kx 21 - CellPack PK 20 liters	Liter	20	51	6	6	7	7
Sysmex Kx 21 - Stromatolyser-WH, 3x500 mL	mL	1500	579	4	4	4	4
Sysmex Kx 21 - printer paper roll 5 m	Roll	5	181	6	6	7	7
Sysmex Kx 21 - Cell clean CL.50 50 mL	mL	50	68	9	9	10	11
Sysmex Kx 21 - Control Eight- THECK Low, 1,5 mL	Kit	1	21	9	9	10	10
Sysmex Kx 21 - Contrôle Eight- THECK Normal, 1,5 mL	Kit	1	21	9	9	10	10
Sysmex Kx 21 - Contrôle Eight- THECK Hight, 1,5 mL	Kit	1	21	9	9	10	10
Sysmex xt 2000i - Cellpack 20 L	Liter	20	51	34	34	38	41
Sysmex xt 2000i - Sulfolyser 5 L	Liter	5	201	3	3	3	3
Sysmex xt 2000i - Stromatolyser FB 5 L	Liter	5	154	7	7	8	9

Training on ForLab and Long-Term Forecasting and Supply Planning of HIV and AIDS-Related Lab Commodities in Cameroon: Technical Report

Product name	Basic unit	Pack size	Price	Forecast quantities			
				2014	2015	2016	2017
Sysmex xt 2000i - Stromatolyser 4DL 5 L	Liter	5	121	7	7	8	9
Sysmex xt 2000i - Stromatolyser 4DS 42 mL	mL	42	292	21	21	23	25
Sysmex xt 2000i - Retsearch II diluent&colorant 1liter/12 mL	Liter	1	305	68	68	75	82
Sysmex xt 2000i - Cellclean 50 mL	mL	50	68	49	49	54	58
Sysmex xt 2000i - Control E-THECK Low (7 tubes) 7x4,5 mL	Kit	1	579	34	34	38	41
Sysmex xt 2000i - Contrôle E-THECK Normal (7 tubes) 7x4,5 mL	Kit	1	408	34	34	38	41
Sysmex xt 2000i - Contrôle E-THECK Hight (7 tubes) 7x4,5 mL	Kit	1	579	34	34	38	41
Sysmex XS 500i - Cellpack 20 L	Liter	20	51	6	6	7	8
Sysmex XS 500i - Sulfolyser 5 L	Liter	5	201	2	2	2	2
Sysmex XS 500i - Stromatolyser FB 5 L	Liter	5	154	2	2	2	2
Sysmex XS 500i - Stromatolyser 4DL 5 L	Liter	5	121	2	2	2	2
Sysmex XS 500i - Stromatolyser 4DS 42 mL	mL	42	292	4	4	4	5
Sysmex XS 500i - Retsearch II diluent&colorant 1 liter/12 mL	Liter	1	305	12	12	14	15
Sysmex XS 500i - Cellclean 50 mL	mL	50	68	9	9	10	11
Sysmex XS 500i - Control E-THECK Low (7 tubes) 7x4,5 mL	Kit	1	579	6	6	7	8
Sysmex XS 500i - Contrôle E-THECK Normal(7 tubes) 7x4,5 mL	Kit	1	408	6	6	7	8
Sysmex XS 500i - Contrôle E-THECK Hight (7 tubes) 7x4,5 mL	Kit	1	579	6	6	7	8
QBC Autoread Plus - Tubes, 500/pack	Tube	500	443	12	12	13	14
Rayo RT-7600 - Diluent 20 L	L	20	114	21	21	23	25
Rayo RT-7600 - Lyse 1 L	L	1	114	7	7	8	8
Rayo RT-7600 - Rinse 20 L	L	20	114	5	5	5	5
Rayo RT-7600 - Cleaner 1 L	L	1	145	83	83	91	99
Rayo RT-7600 - Control level H,N,L 3x2.5 mL	Kit	1	129	21	21	23	25

Viral Load Products

Product name	Basic unit	Pack size	Price	Forecast quantities			
				2014	2015	2016	2017
Abbott RealTime HIV-1 Extraction Reagent Kit (4x24 Tests)	Test	96	2400	294	294	318	347
Abbott RealTime HIV-1 Amplification Reagent Kit (4x24 Tests)	Test	96	2400	294	294	318	347
Abbott RealTime HIV-1 Control Kit (8x3)	Test	24	209	168	168	182	199
Abbott RealTime HIV-1 Calibrator Kit (12*2)	Test	24	209	112	112	122	133
ABI 7500 - RealTime HIV-1 Extraction Reagent Kit (4x24 Tests)	Test	96	2400	284	284	308	336
ABI 7500 - RealTime HIV-1 Amplification Reagent Kit (4x24 Tests)	Test	96	450	284	284	308	336
ABI 7500 - RealTime HIV-1 Control Kit (8x3)	Test	24	209	164	164	177	192
ABI 7500 - RealTime HIV-1 Calibrator Kit (12*2)	Test	24	209	109	109	118	130

Rapid Test Kits

Product name	Basic unit	Pack size	Price	Forecast quantities			
				2014	2015	2016	2017
Determine HIV kit/100 with chase buffer	Test	100	80	25648	25648	29869	32093
ImmunoComb HIV Kit/36 tests	Test	36	100	4136	4136	4817	5174
KHB Shangai	Test	50	100	2980	2980	3469	3728

Training on ForLab and Long-Term Forecasting and Supply Planning of HIV and AIDS-Related Lab Commodities in Cameroon: Technical Report

Consumables

Product name	Basic unit	Pack size	Price	Forecast quantities			
				2014	2015	2016	2017
Powder-free gloves	Glove	100	6	1114	1114	1205	1318
Microtubes conical bottom, sarsted type, 2 mL	Tube	1000	240	64	64	68	74
Microtube Eppendorf, conical bottom, 1.5 mL	Tube	1000	241	64	64	68	74
Absolute ethanol, 2.5 liters	Liter	2.5	58	58	58	63	68
Water for molecular biology	Liter	1	71	12	12	12	12
Crobox, 2mL, 81 positions	Box	1	6	76	76	82	90
Cryovial, 2 mL	Tube	100	38	562	562	607	663
Transfer pipet, 3mL	Pipet	500	64	229	229	247	270
Filter pipet tip 1000 µl	Tip	4800	474	90	90	95	104
Filter pipet tip, 20 µl	Tip	4800	474	43	43	47	49
Filter pipet tip, 200 µl	Tip	4800	474	77	77	84	90
Serological pipet, 10 mL	Pipet	200	88	562	562	607	663
Serological pipet 5 mL	Pipet	200	33	285	285	307	335
Falcon 15 mL conical centrifuge tube	Tube	500	187	18	18	19	20
Vacutainer needle, 21G	Needle	100	7	20519	20519	23896	25676
Safety needle, 23G	Needle	50	35	10262	10262	11950	12840
Safety box, 5 liters	Box	1	10	25648	25648	29869	32093
Vacutainer needle holder, 1000/pack	Holder	1000	111	2056	2056	2395	2572
Cotton wool, 500 g	g	500	5	25648	25648	29869	32093
Pipet tip, 2-20 µl pack of 1000	Tip	1000	18	2569	2569	2991	3214
Pipet tip, 20-200 µl	Tip	1000	11	2569	2569	2991	3214
Pipet tip, 100-1000 µl	Tip	1000	12	2569	2569	2991	3214
Ethanol 70° (1 liter)	Liter	1	3	12828	12828	14937	16049
Gloves, 100/box	Glove	100	6	51291	51291	59733	64182
Pastichlor, 45/box	Lozenge	45	27	576	576	667	718
Garbage bag, black, 50 liters	Bag	10	1	2569	2569	2991	3214
Garbage bag, red, 50 liters	Bag	10	1	2569	2569	2991	3214
Liquid soap	Liter	1	6	5134	5134	5976	6422
EDTA red tubes	Tube	100	10	25648	25648	29869	32093
EDTA tubes 4-5 mL, pack of 100	Tube	100	10	25648	25648	29869	32093
Gray tubes with oxalate fluoride	Tube	100	12	25648	25648	29869	32093

ANNEX 2: LAB COMMODITY SUPPLY PLAN FROM 2014 TO 2015

CD4 Products

Product Name	Basic Unit	Price	Pack Size	Quantity to deliver to reach 8 MoS by Nov-14	November-14 delivery Cost (Including 17% as fret and surcharge)	Quantity to deliver to reach 8 MoS by Feb-15	February-15 delivery Cost (Including 17% as fret and surcharge)	Quantity to deliver to reach 8 MoS by May-15	May-15 delivery Cost (Including 17% as fret and surcharge)	Quantity to deliver to reach 8 MoS by Aug-15	Aug-15 delivery Cost (Including 17% as fret and surcharge)
FACS Count CD4 Abs Reagent Kit	test	213	50	3200	\$797,472	1200	\$299,052	1200	\$299,052	1200	\$299,052
FACS Count Auto CD4/CD4% Reagent	test	350	50	3200	\$1,310,400	1200	\$491,400	1200	\$491,400	1200	\$491,400
BD FACS Count-Control Kit	test	180	25	128	\$26,957	48	\$10,109	48	\$10,109	48	\$10,109
BD FACS Count-FacsClean	litre	38	5	44	\$1,956	42	\$1,867	42	\$1,867	42	\$1,867
BD FACS Count-FacsRinse	litre	33	74	18	\$695	9	\$347	9	\$347	9	\$347
BD FACS Count-FacsFlow	litre	33	20	29	\$1,120	24	\$927	24	\$927	24	\$927
Immunotrol, 2x3 ml normal	ml	184	6	640	\$137,779	240	\$51,667	240	\$51,667	240	\$51,667
Immunotrol, 2x3 ml pathologique	ml	184	6	640	\$137,779	240	\$51,667	240	\$51,667	240	\$51,667
BD FACS Count-Thermal Paper	roll	8	1	1600	\$14,976	600	\$5,616	600	\$5,616	600	\$5,616
BD TriTest CD3/CD4/CD45 Kit of 50 tes	test	320	50	320	\$119,808	120	\$44,928	120	\$44,928	120	\$44,928
BD Calibrite 3 Beads kit of 25 tests	test	160	25	16	\$2,995	6	\$1,123	6	\$1,123	6	\$1,123
BD FACS Lysing Solution 100 ml	ml	200	100	8	\$1,872	3	\$702	3	\$702	3	\$702
Tubes Plastique Falcon 12X75 pack of	tube	220	1000	16	\$4,118	6	\$1,544	6	\$1,544	6	\$1,544
Guava Easy CD4/CD4% Kit of 100 tests	test	350	100	144	\$58,968	54	\$22,113	54	\$22,113	54	\$22,113
Guava check kit of 50 tests	test	165	50	8	\$1,544	3	\$579	3	\$579	3	\$579
Guava ICF instrument cleaning fluid b	ml	22	100	8	\$206	3	\$77	3	\$77	3	\$77
Guava Micro-tubes a fond conique pa	tube	75	500	32	\$2,808	12	\$1,053	12	\$1,053	12	\$1,053

Training on ForLab and Long-Term Forecasting and Supply Planning of HIV and AIDS-Related Lab Commodities in Cameroon: Technical Report

Product Name	Basic Unit	Price	Pack Size	Quantity to deliver to reach 8 MoS by Nov-14	November-14 delivery Cost (Including 17% as fret and surcharge)	Quantity to deliver to reach 8 MoS by Feb-15	February-15 delivery Cost (Including 17% as fret and surcharge)	Quantity to deliver to reach 8 MoS by May-15	May-15 delivery Cost (Including 17% as fret and surcharge)	Quantity to deliver to reach 8 MoS by Aug-15	Aug-15 delivery Cost (Including 17% as fret and surcharge)
Partec CD4 abs easy count kit (100 Tests)	test	361	100	1160	\$489,949	435	\$183,731	435	\$183,731	435	\$183,731
Partec CD4% easy count kit (100 Tests)	test	286	100	1160	\$388,159	435	\$145,560	435	\$145,560	435	\$145,560
Partec Auto CD4/CD4% easy count kit	test	450	100	1160	\$610,740	435	\$229,028	435	\$229,028	435	\$229,028
Count Check Beads green, 50 Tests	test	286	50	48	\$16,062	18	\$6,023	18	\$6,023	18	\$6,023
Sample Tubes, 3.5 ml (500 pcs.)	tube	93	500	232	\$25,244	87	\$9,466	87	\$9,466	87	\$9,466
Decontamination Liquid, 250 ml	ml	65	250	232	\$17,644	87	\$6,616	87	\$6,616	87	\$6,616
Cleaning Solution, 250 ml	ml	24	250	232	\$6,515	87	\$2,443	87	\$2,443	87	\$2,443
Sheath Fluid (5L)	Litre	29	5	0	\$0	0	\$0	0	\$0	0	\$0
Hypochloride Solution, 250ml	ml	15	250	232	\$4,072	87	\$1,527	87	\$1,527	87	\$1,527
CyFlow Thermal Printer paper, roll 5 r	rouleau	8	1	1160	\$10,858	435	\$4,072	435	\$4,072	435	\$4,072
PIMA CD4 cartridge Kit, 100 tests/Kit	Test	700	100	104	\$85,176	39	\$31,941	39	\$31,941	39	\$31,941
PIMA standard bead	Kit	91	1	8	\$852	3	\$319	3	\$319	3	\$319
PIMA Printer paper I	roll	49	10	8	\$459	3	\$172	3	\$172	3	\$172
Lancette retractable, 2 mm, 200/pack	Lancette	32	200	56	\$2,097	21	\$786	21	\$786	21	\$786
					\$4,279,279		\$1,606,457		\$1,606,457		\$1,606,457

Chemistry Products

Product Name	Basic Unit	Price	Pack Size	Quantity to deliver to reach 8 MoS by Nov-14	November-14 delivery Cost (Including 17% as fret and surcharge)	Quantity to deliver to reach 8 MoS by Feb-15	February-15 delivery Cost (Including 17% as fret and surcharge)	Quantity to deliver to reach 8 MoS by May-15	May-15 delivery Cost (Including 17% as fret and surcharge)	Quantity to deliver to reach 8 MoS by Aug-15	Aug-15 delivery Cost (Including 17% as fret and surcharge)
Spectro - Gluocse 200mL	ml	50	200	1080	\$63,180	405	\$23,693	405	\$23,693	405	\$23,693
Spectro - Creatinine 200mL	ml	50	200	1080	\$63,180	405	\$23,693	405	\$23,693	405	\$23,693
Spectro - ALT/GPT 200mL	ml	50	200	1080	\$63,180	405	\$23,693	405	\$23,693	405	\$23,693
Spectro - AST/GOT 200mL	ml	50	200	1080	\$63,180	405	\$23,693	405	\$23,693	405	\$23,693
Spectro - Control normal 10x5 ml	ml	80	50	144	\$13,478	54	\$5,054	54	\$5,054	54	\$5,054
Spectro - Control pathologic 10x5 ml	ml	80	50	144	\$13,478	54	\$5,054	54	\$5,054	54	\$5,054
Spectro - tubes à hémolyse P/500	tube	106	500	432	\$53,577	162	\$20,091	162	\$20,091	162	\$20,091
Spectro - printer paper pack , roll of 5	rouleau	3	1	2160	\$7,582	810	\$2,843	810	\$2,843	810	\$2,843
Cobas C111 - Glucose 400 tests	test	34	400	24	\$955	9	\$358	9	\$358	9	\$358
Cobas C111 - Creatinine 400 tests	test	95	400	24	\$2,668	9	\$1,000	9	\$1,000	9	\$1,000
Cobas C111 - Alanine Aminotransferase	test	25	400	24	\$702	9	\$263	9	\$263	9	\$263
Cobas C111 - Aspartate Aminotransferase	test	25	400	24	\$702	9	\$263	9	\$263	9	\$263
Cobas C111 - Cfas 12x3 ml	ml	79	36	2	\$185	1	\$92	1	\$92	1	\$92
Cobas C111 - Precinorm U 4x5 ml	ml	39	20	8	\$365	3	\$137	3	\$137	3	\$137
Cobas C111 - Precipath U 4x5 ml	ml	39	20	8	\$365	3	\$137	3	\$137	3	\$137
Cobas C111 - Sample cups pack of 4x2	cup	77	1000	8	\$721	3	\$270	3	\$270	3	\$270
Cobas C111 - Sample cups - micro pack	cup	22	500	16	\$412	6	\$154	6	\$154	6	\$154
Cobas C111 - Printer Paper roll of 5 m	rouleau	9	1	88	\$927	33	\$347	33	\$347	33	\$347
Cobas C111 - Cleaner acid Integra 1 lit	Litre	29	1	16	\$543	6	\$204	6	\$204	6	\$204
Cobas C111 - Activator 9x12 ml	ml	52	108	2	\$122	1	\$61	1	\$61	1	\$61
Cobas C111 - microcuvettes segment	cuvette	118	5000	8	\$1,104	3	\$414	3	\$414	3	\$414

Training on ForLab and Long-Term Forecasting and Supply Planning of HIV and AIDS-Related Lab Commodities in Cameroon: Technical Report

Product Name	Basic Unit	Price	Pack Size	Quantity to deliver to reach 8 MoS by Nov-14	November-14 delivery Cost (Including 17% as fret and surcharge)	Quantity to deliver to reach 8 MoS by Feb-15	February-15 delivery Cost (Including 17% as fret and surcharge)	Quantity to deliver to reach 8 MoS by May-15	May-15 delivery Cost (Including 17% as fret and surcharge)	Quantity to deliver to reach 8 MoS by Aug-15	Aug-15 delivery Cost (Including 17% as fret and surcharge)
Cobas C311 - Glucose 800 tests	test	74	800	8	\$693	3	\$260	3	\$260	3	\$260
Cobas C311 - Creatinine 700 tests	test	33	700	8	\$309	3	\$116	3	\$116	3	\$116
Cobas C311 - Alanine Aminotransferase	test	23	500	8	\$215	3	\$81	3	\$81	3	\$81
Cobas C311 - Alanine Aminotransferase	test	23	500	8	\$215	3	\$81	3	\$81	3	\$81
Cobas C311 - Cfas 12x3 ml	ml	94	36	2	\$220	1	\$110	1	\$110	1	\$110
Cobas C311 - Precinorm U 4x5 ml	ml	42	20	2	\$98	1	\$49	1	\$49	1	\$49
Cobas C311 - Precipath U 4x5 ml	ml	44	20	2	\$103	1	\$51	1	\$51	1	\$51
Cobas C311 - Cuvettes pack of 20 x 100	cuvette	486	20000	2	\$1,137	1	\$569	1	\$569	1	\$569
Cobas C311 - Waste Container pack of	container	67	20	2	\$157	1	\$78	1	\$78	1	\$78
Cobas C311 - Cobas Cups pack of 1000	cup	34	1000	8	\$318	3	\$119	3	\$119	3	\$119
Cobas C311 - Cleaner 1 liter	Litre	35	1	8	\$328	3	\$123	3	\$123	3	\$123
Cobas C311 - Deproteinizer 6x21 ml	ml	23	126	2	\$54	1	\$27	1	\$27	1	\$27
Cobas C311 - NaCl 9%	kit	26	1	2	\$61	1	\$30	1	\$30	1	\$30
Cobas C311 - NaOH-D, Cobas C	kit	21	1	2	\$49	1	\$25	1	\$25	1	\$25
Cobas C311 - NaOH Basic Wash	kit	45	1	2	\$105	1	\$53	1	\$53	1	\$53
Cobas C311 - Acid Wash solution	kit	69	1	2	\$161	1	\$81	1	\$81	1	\$81
Cobas C311 - Sample Cleaner 1	kit	84	1	2	\$197	1	\$98	1	\$98	1	\$98
Cobas C311 - SMS, Cobas C	kit	32	1	2	\$75	1	\$37	1	\$37	1	\$37
Cobas C311 - SMS/Acid Wash	kit	147	1	2	\$344	1	\$172	1	\$172	1	\$172
Cobas C311 - Hitergent solution	Litre	22	1	8	\$206	3	\$77	3	\$77	3	\$77
Reflotron Sprint - Glucose kit 30 tests											
Reflotron Sprint - Glucose kit 30 tests	test	32	30	64	\$2,396	24	\$899	24	\$899	24	\$899
Reflotron Sprint - Creatinine kit 30 tests											
Reflotron Sprint - Creatinine kit 30 tests	test	32	30	64	\$2,396	24	\$899	24	\$899	24	\$899
Reflotron Sprint - GPT kit 30 tests											
Reflotron Sprint - GPT kit 30 tests	test	32	30	64	\$2,396	24	\$899	24	\$899	24	\$899
Reflotron Sprint - GOT kit 30 tests											
Reflotron Sprint - GOT kit 30 tests	test	32	30	64	\$2,396	24	\$899	24	\$899	24	\$899
Reflotron Sprint - Cleaner Check kit 15 tests											
Reflotron Sprint - Cleaner Check kit 15 tests	test	24	15	16	\$449	6	\$168	6	\$168	6	\$168
Reflotron Sprint - Precinorm U kit of 1 test											
Reflotron Sprint - Precinorm U kit of 1 test	test	39	140	2	\$91	1	\$46	1	\$46	1	\$46
Reflotron Sprint - Precipath U kit of 14 tests											
Reflotron Sprint - Precipath U kit of 14 tests	test	58	140	2	\$136	1	\$68	1	\$68	1	\$68
Reflotron Sprint - Printer paper roll of rouleau											
Reflotron Sprint - Printer paper roll of rouleau		8	1	16	\$150	6	\$56	6	\$56	6	\$56
					\$366,060			\$137,684			\$137,684

Hematology Products

Product Name	Basic Unit	Price	Pack Size	Quantity to deliver to reach 8 MoS by Nov-14	November-14 delivery Cost (Including 17% as fret and surcharge)	Quantity to deliver to reach 8 MoS by Feb-15	February-15 delivery Cost (Including 17% as fret and surcharge)	Quantity to deliver to reach 8 MoS by May-15	May-15 delivery Cost (Including 17% as fret and surcharge)	Quantity to deliver to reach 8 MoS by Aug-15	Aug-15 delivery Cost (Including 17% as fret and surcharge)
Hema Screen 18 - Differential isotonic	L	114	20	224	\$29,877	84	\$11,204	84	\$11,204	84	\$11,204
Hema Screen 18 - Differential lysing s	mL	114	500	144	\$19,207	54	\$7,203	54	\$7,203	54	\$7,203
Hema Screen 18 - Detescreen solutio	L	145	5	176	\$29,858	66	\$11,197	66	\$11,197	66	\$11,197
Hema Screen 18 - Hematology Contro	Kit	129	1	224	\$33,808	84	\$12,678	84	\$12,678	84	\$12,678
Cell Dyn 1800 - Diluent 20L	L	114	20	64	\$8,536	24	\$3,201	24	\$3,201	24	\$3,201
Cell Dyn 1800 - Cyanide free Lytic Lyse	L	144	4	8	\$1,348	3	\$505	3	\$505	3	\$505
Cell Dyn 1800 - Detergent 20L	L	26	20	16	\$487	6	\$183	6	\$183	6	\$183
Cell Dyn 1800 - Enzymatic Cleaner Cor	mL	26	30	856	\$26,040	321	\$9,765	321	\$9,765	321	\$9,765
Cell Dyn 1800 - Control N, H, L	Kit	129	1	64	\$9,660	24	\$3,622	24	\$3,622	24	\$3,622
ABX Micro 60 - Minidil LMG 10L	L	80	10	16	\$1,498	6	\$562	6	\$562	6	\$562
ABX Micro 60 - Alphalyse 360 mL	ml	95	360	8	\$889	3	\$333	3	\$333	3	\$333
ABX Micro 60 - Miniclean 1L	L	114	1	32	\$4,268	12	\$1,601	12	\$1,601	12	\$1,601
ABX Micro 60 - Minocclair 0.5L	ml	114	500	64	\$8,536	24	\$3,201	24	\$3,201	24	\$3,201
ABX Micro 60 - Minotrol 16 Tri-Level C	Kit	129	1	16	\$2,415	6	\$906	6	\$906	6	\$906
ABX Micro 60 - Minocal Calibrator 2x2	Kit	129	1	16	\$2,415	6	\$906	6	\$906	6	\$906
ABX Pentra 80 - Diluent 20L	L	114	20	32	\$4,268	12	\$1,601	12	\$1,601	12	\$1,601
ABX Pentra 80 - Lysebio 0.4L	mL	144	400	24	\$4,044	9	\$1,516	9	\$1,516	9	\$1,516
ABX Pentra 80 - Eosinofix 1L	L	144	1	8	\$1,348	3	\$505	3	\$505	3	\$505
ABX Pentra 80 - Basolyse II 1L	L	144	1	8	\$1,348	3	\$505	3	\$505	3	\$505
ABX Pentra 80 - Cleaner 1L	L	114	1	120	\$16,006	45	\$6,002	45	\$6,002	45	\$6,002
ABX Pentra 80 - Minocclair 0.5L	ml	114	500	240	\$32,011	90	\$12,004	90	\$12,004	90	\$12,004
ABX Pentra 80 - Difftrol Tri-Level Cont kit		129	1	32	\$4,830	12	\$1,811	12	\$1,811	12	\$1,811
ABX Pentra 80 - Minocal Calibrator 2x: kit		129	1	32	\$4,830	12	\$1,811	12	\$1,811	12	\$1,811

Training on ForLab and Long-Term Forecasting and Supply Planning of HIV and AIDS-Related Lab Commodities in Cameroon: Technical Report

Product Name	Basic Unit	Price	Pack Size	Quantity to deliver to reach 8 MoS by Nov-14	November-14 delivery Cost (Including 17% as fret and surcharge)	Quantity to deliver to reach 8 MoS by Feb-15	February-15 delivery Cost (Including 17% as fret and surcharge)	Quantity to deliver to reach 8 MoS by May-15	May-15 delivery Cost (Including 17% as fret and surcharge)	Quantity to deliver to reach 8 MoS by Aug-15	Aug-15 delivery Cost (Including 17% as fret and surcharge)
HumaCount - Diluent 20L	L	114	20	40	\$5,335	15	\$2,001	15	\$2,001	15	\$2,001
HumaCount - Lyse CF 1L	L	114	2	8	\$1,067	3	\$400	3	\$400	3	\$400
HumaCount - Cleaner 1L	L	145	2	72	\$12,215	27	\$4,581	27	\$4,581	27	\$4,581
HumaCount - Control level 1,2,3 3x2.5 Kit		129	1	40	\$6,037	15	\$2,264	15	\$2,264	15	\$2,264
Mindray BC-2800 - Diluent 20L	L	114	20	40	\$5,335	15	\$2,001	15	\$2,001	15	\$2,001
Mindray BC-2800 - Lyse 1L	L	114	2	8	\$1,067	3	\$400	3	\$400	3	\$400
Mindray BC-2800 - Cleaner 1L	L	145	2	72	\$12,215	27	\$4,581	27	\$4,581	27	\$4,581
Mindray BC-2800 - Control level H,N,L Kit		129	1	40	\$6,037	15	\$2,264	15	\$2,264	15	\$2,264
URIT-3300 - Diluent 20L	L	114	20	40	\$5,335	15	\$2,001	15	\$2,001	15	\$2,001
URIT-3300 - Lyse 1L	L	114	2	8	\$1,067	3	\$400	3	\$400	3	\$400
URIT-3300 - Cleaner 1L	L	145	2	72	\$12,215	27	\$4,581	27	\$4,581	27	\$4,581
URIT-3300 - Control level H,N,L 3x2.5n Kit		129	1	40	\$6,037	15	\$2,264	15	\$2,264	15	\$2,264
URIT-2900 - Diluent 20L	L	114	20	8	\$1,067	3	\$400	3	\$400	3	\$400
URIT-2900 - Lyse 1L	L	114	2	8	\$1,067	3	\$400	3	\$400	3	\$400
URIT-2900 - Cleaner 1L	L	145	2	8	\$1,357	3	\$509	3	\$509	3	\$509
URIT-2900 - Control level H,N,L 3x2.5n Kit		129	1	8	\$1,207	3	\$453	3	\$453	3	\$453
Mindray BC-3000 - Diluent 20L	L	114	20	16	\$2,134	6	\$800	6	\$800	6	\$800
Mindray BC-3000 - Lyse 1L	L	114	2	2	\$267	1	\$133	1	\$133	1	\$133
Mindray BC-3000 - Cleaner 1L	L	145	2	24	\$4,072	9	\$1,527	9	\$1,527	9	\$1,527
Mindray BC-3000 - Control level H,N,L Kit		129	1	16	\$2,415	6	\$906	6	\$906	6	\$906
Hysel Celly 70 - Diluent 20L	L	114	20	2	\$267	1	\$133	1	\$133	1	\$133
Hysel Celly 70 - Lyse 1L	L	114	1	2	\$267	1	\$133	1	\$133	1	\$133
Hysel Celly 70 - Rinse 20L	L	114	20	2	\$267	1	\$133	1	\$133	1	\$133
Hysel Celly 70 - Cleaner 1L	L	145	1	8	\$1,357	3	\$509	3	\$509	3	\$509
Hysel Celly 70 - Control level H,N,L 3x Kit		129	1	2	\$302	1	\$151	1	\$151	1	\$151

Annex 2

Product Name	Basic Unit	Price	Pack Size	Quantity to deliver to reach 8 MoS by Nov-14	November-14 delivery Cost (Including 17% as fret and surcharge)	Quantity to deliver to reach 8 MoS by Feb-15	February-15 delivery Cost (Including 17% as fret and surcharge)	Quantity to deliver to reach 8 MoS by May-15	May-15 delivery Cost (Including 17% as fret and surcharge)	Quantity to deliver to reach 8 MoS by Aug-15	Aug-15 delivery Cost (Including 17% as fret and surcharge)
Mindray BC-2300 - Diluent 20L	L	114	20	8	\$1,067	3	\$400	3	\$400	3	\$400
Mindray BC-2300 - Lyse 1L	L	114	2	2	\$267	1	\$133	1	\$133	1	\$133
Mindray BC-2300 - Cleaner 1L	L	145	2	8	\$1,357	3	\$509	3	\$509	3	\$509
Mindray BC-2300 - Control level H,N,L Kit		129	1	8	\$1,207	3	\$453	3	\$453	3	\$453
Sysmex Kx 21 - CellPack PK 20 liters	Litre	51	20	8	\$477	3	\$179	3	\$179	3	\$179
Sysmex Kx 21 - Stromatolyser-WH, 3x	ml	579	1500	2	\$1,355	1	\$677	1	\$677	1	\$677
Sysmex Kx 21 - printer paper roll 5m	roll	181	5	8	\$1,694	3	\$635	3	\$635	3	\$635
Sysmex Kx 21 - Cell clean CL.50 50 m	ml	68	50	8	\$636	3	\$239	3	\$239	3	\$239
Sysmex Kx 21 - Control Eight-THECK Lc Kit		21	1	8	\$197	3	\$74	3	\$74	3	\$74
Sysmex Kx 21 - Contrôle Eight-THECK I Kit		21	1	8	\$197	3	\$74	3	\$74	3	\$74
Sysmex Kx 21 - Contrôle Eight-THECK I Kit		21	1	8	\$197	3	\$74	3	\$74	3	\$74
Sysmex xt 2000i - Cellpack 20L	Litre	51	20	24	\$1,432	9	\$537	9	\$537	9	\$537
Sysmex xt 2000i - Sulfolyser 5L	Litre	201	5	2	\$470	1	\$235	1	\$235	1	\$235
Sysmex xt 2000i - Stromatolyser FB 5L	Litre	154	5	8	\$1,441	3	\$541	3	\$541	3	\$541
Sysmex xt 2000i - Stromatolyser 4DL 5	Litre	121	5	8	\$1,133	3	\$425	3	\$425	3	\$425
Sysmex xt 2000i - Stromatolyser 4DS 4	ml	292	42	16	\$5,466	6	\$2,050	6	\$2,050	6	\$2,050
Sysmex xt 2000i - Retsearch II diluent	Litre	305	1	48	\$17,129	18	\$6,423	18	\$6,423	18	\$6,423
Sysmex xt 2000i - Cellclean 50 ml	ml	68	50	32	\$2,546	12	\$955	12	\$955	12	\$955
Sysmex xt 2000i - Control E-THECK Lov Kit		579	1	24	\$16,258	9	\$6,097	9	\$6,097	9	\$6,097
Sysmex xt 2000i - Contrôle E-THECK Nc Kit		408	1	24	\$11,457	9	\$4,296	9	\$4,296	9	\$4,296
Sysmex xt 2000i - Contrôle E-THECK Hi Kit		579	1	24	\$16,258	9	\$6,097	9	\$6,097	9	\$6,097
Sysmex XS 500i - Cellpack 20L	Litre	51	20	8	\$477	3	\$179	3	\$179	3	\$179
Sysmex XS 500i - Sulfolyser 5L	Litre	201	5	2	\$470	1	\$235	1	\$235	1	\$235
Sysmex XS 500i - Stromatolyser FB 5L	Litre	154	5	2	\$360	1	\$180	1	\$180	1	\$180
Sysmex XS 500i - Stromatolyser 4DL 5	Litre	121	5	2	\$283	1	\$142	1	\$142	1	\$142
Sysmex XS 500i - Stromatolyser 4DS 4	ml	292	42	2	\$683	1	\$342	1	\$342	1	\$342
Sysmex XS 500i - Retsearch II diluent	Litre	305	1	8	\$2,855	3	\$1,071	3	\$1,071	3	\$1,071
Sysmex XS 500i - Cellclean 50 ml	ml	68	50	8	\$636	3	\$239	3	\$239	3	\$239
Sysmex XS 500i - Control E-THECK Low Kit		579	1	8	\$5,419	3	\$2,032	3	\$2,032	3	\$2,032
Sysmex XS 500i - Contrôle E-THECK Nc Kit		408	1	8	\$3,819	3	\$1,432	3	\$1,432	3	\$1,432
Sysmex XS 500i - Contrôle E-THECK Hi Kit		579	1	8	\$5,419	3	\$2,032	3	\$2,032	3	\$2,032
QBC Autoread Plus - Tubes, 500/pack	Tube	443	500	8	\$4,146	3	\$1,555	3	\$1,555	3	\$1,555
Rayo RT-7600 - Diluent 20L	L	114	20	16	\$2,134	6	\$800	6	\$800	6	\$800
Rayo RT-7600 - Lyse 1L	L	114	1	8	\$1,067	3	\$400	3	\$400	3	\$400

Viral Load Products

Product Name	Basic Unit	Price	Pack Size	Quantity to deliver to reach 8 MoS by Nov-14	November-14 delivery Cost (Including 17% as fret and surcharge)	Quantity to deliver to reach 8 MoS by Feb-15	February-15 delivery Cost (Including 17% as fret and surcharge)	Quantity to deliver to reach 8 MoS by May-15	May-15 delivery Cost (Including 17% as fret and surcharge)	Quantity to deliver to reach 8 MoS by Aug-15	Aug-15 delivery Cost (Including 17% as fret and surcharge)
Abbott RealTime HIV-1 Extraction Rea	test	2400	96	200	\$561,600	75	\$210,600	75	\$210,600	75	\$210,600
Abbott RealTime HIV-1 Amplification	Test	2400	96	200	\$561,600	75	\$210,600	75	\$210,600	75	\$210,600
Abbott RealTime HIV-1 Control Kit (8x	test	209	24	112	\$27,387	42	\$10,270	42	\$10,270	42	\$10,270
Abbott RealTime HIV-1 Calibrator Kit	test	209	24	72	\$17,606	27	\$6,602	27	\$6,602	27	\$6,602
ABI 7500 - RealTime HIV-1 Extraction F	test	2400	96	192	\$539,136	72	\$202,176	72	\$202,176	72	\$202,176
ABI 7500 - RealTime HIV-1 Amplificati	test	450	96	192	\$101,088	72	\$37,908	72	\$37,908	72	\$37,908
ABI 7500 - RealTime HIV-1 Control Kit	test	209	24	112	\$27,387	42	\$10,270	42	\$10,270	42	\$10,270
ABI 7500 - RealTime HIV-1 Calibrator k	test	209	24	72	\$17,606	27	\$6,602	27	\$6,602	27	\$6,602
					\$1,853,411			\$695,029	\$695,029		

Consumables

Product Name	Basic Unit	Price	Pack Size	Quantity to deliver to reach 8 MoS by Nov-14	November-14 delivery Cost (Including 17% as fret and surcharge)	Quantity to deliver to reach 8 MoS by Feb-15	February-15 delivery Cost (Including 17% as fret and surcharge)	Quantity to deliver to reach 8 MoS by May-15	May-15 delivery Cost (Including 17% as fret and surcharge)	Quantity to deliver to reach 8 MoS by Aug-15	Aug-15 delivery Cost (Including 17% as fret and surcharge)
Gant sans talc MM paquet de 100	gant	6	100	0	\$0	0	\$0	0	\$0	0	\$0
Microtubes a fond conique type sarst	Tube	240	1000	40	\$11,232	15	\$4,212	15	\$4,212	15	\$4,212
Microtube Eppendorf a fond conique	Tube	241	1000	40	\$11,279	15	\$4,230	15	\$4,230	15	\$4,230
Ethanol Absolu 2.5 litres	Litre	58	2.5	40	\$2,714	15	\$1,018	15	\$1,018	15	\$1,018
Eau Qualite Biologie Moleculaire	Litre	71	1	8	\$665	3	\$249	3	\$249	3	\$249
Boite de congelation pour Cryotube 2	Boite	6	1	48	\$337	18	\$126	18	\$126	18	\$126
Tubes Cryovials 2 mL a Jupe Boucho V	Tube	38	100	376	\$16,717	141	\$6,269	141	\$6,269	141	\$6,269
Pipette de transfert stérile 3ml paque	Pipette	64	500	152	\$11,382	57	\$4,268	57	\$4,268	57	\$4,268
Cone Filtre 1000 µl sur rack	Cône	474	4800	64	\$35,493	24	\$13,310	24	\$13,310	24	\$13,310
Cone Filtre 20 µl sur rack	Cône	474	4800	32	\$17,747	12	\$6,655	12	\$6,655	12	\$6,655
Cone Filtre 200 µl sur rack	Cône	474	4800	48	\$26,620	18	\$9,982	18	\$9,982	18	\$9,982
Pipette plastique, stérile ,10 ml, 200/p	pipette	88	200	376	\$38,713	141	\$14,517	141	\$14,517	141	\$14,517
Pipette plastique, stérile, 5 ml, 200/p	pipette	33	200	192	\$7,413	72	\$2,780	72	\$2,780	72	\$2,780
Polypropylene Falcon tube 15 ml, 500	Tube	187	500	16	\$3,501	6	\$1,313	6	\$1,313	6	\$1,313
Aiguille de prélèvement sous vide /2	Aiguille	7	100	13680	\$112,039	5130	\$42,015	5130	\$42,015	5130	\$42,015
Aiguille à ailette sans core 23G box of	Aiguille	35	50	6840	\$280,098	2565	\$105,037	2565	\$105,037	2565	\$105,037
Collecteur pour objets tranchants sou	collecteur	10	1	17096	\$200,023	6411	\$75,009	6411	\$75,009	6411	\$75,009
Core standard pour prelevement sous	Core	111	1000	1368	\$177,662	513	\$66,623	513	\$66,623	513	\$66,623
Coton hydrophile 500 g	g	5	500	17096	\$100,012	6411	\$37,504	6411	\$37,504	6411	\$37,504
Embouts 2-20µl paquet de 1000	Cône	18	1000	0	\$0	636	\$13,394	642	\$13,521	642	\$13,521
Embouts 20-200µl paquet de 1000	Cône	11	1000	1712	\$22,033	642	\$8,263	642	\$8,263	642	\$8,263
Embouts 100-1000µl paquet de 1000	Cône	12	1000	1712	\$24,036	642	\$9,014	642	\$9,014	642	\$9,014
Ethanol 70° (1 litre)	litre	3	1	8552	\$30,018	3207	\$11,257	3207	\$11,257	3207	\$11,257
Gant d'examen latex MM boite de 100	gant	6	100	34192	\$240,028	12822	\$90,010	12822	\$90,010	12822	\$90,010
Pastille de Chloramine (pasti-chlor),	pastille	27	45	384	\$12,131	144	\$4,549	144	\$4,549	144	\$4,549
Sacs poubelles 50 litres noir paquet d	Sac	1	10	1712	\$2,003	642	\$751	642	\$751	642	\$751
Sacs poubelles 50 litres rouge paquet	Sac	1	10	1712	\$2,003	642	\$751	642	\$751	642	\$751
Liquide anti-septique pour lavage des	Litre	6	1	3424	\$24,036	1284	\$9,014	1284	\$9,014	1284	\$9,014
Tubes à prélèvement ss vide 4-5 ml rc	Tube	10	100	17096	\$200,023	6411	\$75,009	6411	\$75,009	6411	\$75,009
Tubes à prélèvement ss vide 4-5 ml vi	Tube	10	100	17096	\$200,023	6411	\$75,009	6411	\$75,009	6411	\$75,009
Tubes à prélèvement ss vide 4-5 ml gr	Tube	12	100	17096	\$240,028	6411	\$90,010	6411	\$90,010	6411	\$90,010
					\$2,050,008		\$782,147		\$782,274		\$782,274

Rapid Test Kits

Product Name	Basic Unit	Price	Pack Size	Quantity to deliver to reach 8 MoS by Nov-14	November-14 delivery Cost (Including 17% as fret and surcharge)	Quantity to deliver to reach 8 MoS by Feb-15	February-15 delivery Cost (Including 17% as fret and surcharge)	Quantity to deliver to reach 8 MoS by May-15	May-15 delivery Cost (Including 17% as fret and surcharge)	Quantity to deliver to reach 8 MoS by Aug-15	Aug-15 delivery Cost (Including 17% as fret and surcharge)
Determine VIH kit/100 with chase bu	Test	80	100	17096	\$1,600,186	6411	\$600,070	6411	\$600,070	6411	\$600,070
ImmunoComb HIV Kit/36 tests	Test	100	36	2760	\$322,920	1035	\$121,095	1035	\$121,095	1035	\$121,095
KHB Shangai	Test	100	50	1984	\$232,128	744	\$87,048	744	\$87,048	744	\$87,048
Oraqik HIV 1/2 tests	Test		100			0		0		0	
					\$2,155,234	\$808,213		\$808,213		\$808,213	
GRAND TOTAL (\$)					\$11,163,720	\$4,202,619		\$4,202,745		\$4,202,745	

ANNEX 3: WORKSHOP AGENDA

ORIENTATION ON LAB COMMODITIES QUANTIFICATION AND FORLAB TOOL APRIL 28–MAY 6, 2014 YAOUNDÉ, CAMEROON

	Time	Session	Facilitators
Day 1	8:30 – 8:45 am	Registration	All
	8:45 – 9:00 am	Opening/Welcome remarks	SIAPS/PEPFAR/CNLS
	9:00 – 9:15 am	Introductions – Ice break	All participants
	9:15 – 9:30 am	Session 1: Introduction to workshop – Workshop goals, objectives & schedules	Gege Buki
	9:30 – 10:00 am	Pre-Test	All participants
	10:00 – 11:00 am	Session 2: Review of quantification concepts	Bedel Evi
	11:00 – 11:15 am	Coffee/Tea Break	
	11:15 am – Noon	Session 3: Review of forecasting methodologies	Bedel Evi
	Noon – 1:00 pm	Session 4: Forecasting for laboratory commodities – Issues and considerations	Bedel Evi
	1:00 – 2:00 pm	Lunch	
	2:00 – 3:45 pm	Session 5: Introduction to <i>ForLab</i> ® and installation of software	Bedel Evi
	3:45 – 4:50 pm	Session 6: Data collection, organization, analysis and adjustment for quantification	Bedel Evi
	4:50 – 5:00 pm	Summary of the day/application in Cameroon	All
April 29, 2014			
Day 2	8:30 – 9:00 am	Recap from Day 1	Participants
	9:00 – 9:30 am	Session 7: Presentation of Cameroon data set	Yves Kaptue Towa
	9:30 – 10:30am	Session 8: Analysis of lab commodities and usage rate <u>Working groups</u> Group 1: CD4 Count Group 2: Hematology Group 3: Biochemistry Group 4: Viral load/EID Group 5: Rapid test kits, lab consumables, and other tests	All participants
	10:30 – 10:45 am	Coffee/Tea Break	
	10:45 am – 1:30 pm	Session 8: Cont'd	All participants
	1:30 – 2:30 pm	Lunch	
	2:30 – 3:45 pm	Session 8: Presentation of each group	All participants
	3:45 – 4.45 pm	Session 9: Configuring ForLab dataset	All participants
	4:45 – 5:00 pm	Summary of the day/application in Cameroon	All participants

Training on ForLab and Long-Term Forecasting and Supply Planning of HIV and AIDS-Related Lab Commodities in Cameroon: Technical Report

April 30, 2014			
Day 3	8:30 – 9:00 am	Recap from Day 2	Participants
	9:00 – 10.45 am	Session 9: Configuring ForLab dataset (Cont'd)	All participants
	10:45 – 11:00 am	Coffee/Tea Break	
	11:00 am – 1:30 pm	Session 9: Configuring ForLab dataset (Cont'd)	All participants
	1:30 – 2:30 pm	Lunch	
	2:30 – 4:45 pm	Session 9: Configuring ForLab dataset (Cont'd)	All participants
	4:45 – 5:00 pm	Summary of the day/application in Cameroon	
May 2, 2014			
Day 4	8:30 am – 9:00 am	Recap from Day 3	Participants
	9:00 – 11:00 am	Session 10: Preparation assumptions for ForLab	Bedel Evi All participants
	11:00 – 11:15 am	Coffee/Tea Break	
	11:15 am – 1:30 pm	Session 11: Forecasting using ForLab	Bedel Evi
	1:30 – 2:30 pm	Lunch	
	2:30 – 4:45 pm	Session 11: Forecasting using ForLab (Cont'd)	Bedel Evi
	4:45 – 5:00 pm	Summary of the day/application in Cameroon	Participants
May5, 2014			
Day 5	8:30 – 9:00 am	Recap from Day 4	Participants
	9:00 – 11:00 am	Session 11: Forecasting using ForLab (Cont'd)	Bedel Evi
	11:00 – 11:15 am	Coffee/Tea Break	
	11:15 am – 1:30 pm	Session 11: Forecasting using ForLab (Cont'd)	Bedel Evi
	1:30 – 2:30 pm	Lunch	
	2:30 – 4:45 pm	Session 12: Presentation and discussion of results	Bedel Evi
	4:45 – 5:00 pm	Summary of the day/application in Cameroon	Participants

May 6, 2014			
Day 6	8:30 – 9:00 am	Recap from Day 5	Participants
	8:30 – 10:15 am	Session 13: Introduction to lab commodities – supply planning and supply planning exercise	Bedel Evi
	10:15 – 11:00 am	Session 14: Presentation and discussion of results	Bedel Evi
	11:00 – 11:15 am	Coffee/Tea Break	
	11:15 am – 1:30 pm	Session 15: Challenges and recommendations for effective quantification and supply chain management in Cameroon	Bedel Evi
	1:30 – 2:30 pm	Lunch	
	2:30 – 3:30 pm	Session 15: Challenges and recommendations for effective quantification and supply chain management in Cameroon (Cont'd)	All participants
	3:30 – 4:30 pm	Post-test	Participants
	4:30 – 4:45 pm	Training assessment	All participants
	4:45 – 5:00 pm	Closing remarks	SIAPS/PEPFAR/CNLS

ANNEX 4: LIST OF PARTICIPANTS

Name	Title	Organization
Dr Leila Djamilatou	Medecin Biologiste	GTR/CNLS Nord
Estel Tonte	Laboratory Scientist	Regional Hospital Bamenda
Gordon Okpu	MLS	CDC
Chales Atem	Lab Program Officer	CHAI
M. Paul Minka	Major Banque de sang	HCY
Yves Kaptue	TA	MSH
Ernest Nguemne	Div ARV GTC/CNLS	GTC/CNLS
Serge Valery Edimo	PSM	GTC/CNLS
Dr Angeline Boula	Medecin Biologiste	CME/FCB
Marguerite Wodo	Major HDJT	HCY
Dr Esther Seke	ESTHERAID ACPEA	ESTHER
Nestor Amanye Botiba	Point focal GAS	GTC/CNLS
Dr David Kob Same		GTC/CNLS
Amadou Hamadou	ESTHER Responsable Labo	ESTHER
Philippe Germain Bruno Medouna	CENAME	CENAME
Dr Pauline Bodio	CSPS	CAPR/C
Josiane Essola	MD Biologist	HLD
Elizabeth Pedouon Mafola		DPML
Dr Bob T Raissa Mvouni	MD Biologiste	HD Banassama Douala
Glory Leila Bimila	TA	CHAI
Jean Bedel Evi	RPD	MSH/SIAPS
Aline Kane	STS	MSH/SIAPS

ANNEX 5: DEBRIEF TO MISSION

ForLAB Training and Quantification of lab products in Cameroon

Debrief – Wednesday May 7, 2014

Bedel Evi
SIAPS West Africa Regional Project Director



What is ForLAB

- A laboratory commodities forecasting tool
- Supported by COR, collaboration between CHAI and SCMS.
- CHAI supported software design and development structure
- SCMS provided technical expertise in software functionality, training curriculum, pilot test tool and training material and engage country-level stakeholders in roll out



Functionalities of ForLAB

- Conducts multi-year laboratory forecast using 3 methods:
 - Service statistics (test #s)
 - Logistics data (consumption)
 - Demographic (program targets)
- Compares output of methodology to identify program and funding gaps
- Compares actual and forecast instrument utilization, diagnostics contribution and instrument diversity



Process Flow of ForLAB

Inputs		Outputs
Program Data: Test Profile Product Profile Instruments Protocols Laboratory Profile		Reports: Forecast Summary Forecast Comparison Forecast Results
Quantification Data: Historical Consumption Historical Service Data ART Quantification Variable		



Dashboard Utility



Who benefits from ForLAB

- Quantification and Forecasting Advisors at the country level – estimate commodity needs
- Program Associates and Program Managers – estimate program scale up
- Central level MOH personnel in charge of laboratory program implementation – policy implementation protocols
- Funding agencies – identify funding need, funding gaps and optimal resource utilization



ForLAB Training – Cameroon Experience

Objective

1. To build the capacity of the National Quantification Committee members in the use of the new Laboratory Quantification Tool (ForLAB) to perform multi-method forecast.
2. To support Cameroon National quantification committee to perform multiyear quantification of lab products needed to support HIV and AIDS Program

Improved Access. Improved Services. Better Health Outcomes



Cameroon Experience

Approach

- Modular methods - Employed theoretical and hands-on modules
- Pre- and Post- assessment of participants
- Prepared forecast for Cameroon using active (live) data
- Shared experience and comments on utilization of the tool

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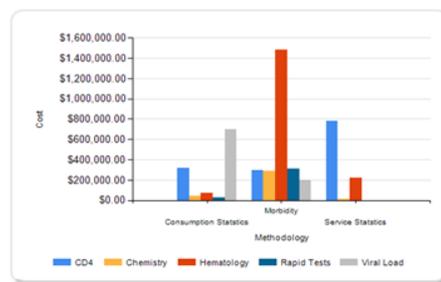
Training Outcome

- 20 Participants from CNLS, CENAME, Central Hospital of Yaoundé, Chantal Biya Foundation, Regional Hospitals & Blood banks, CDC, CHAI and ESTHER
- All 20 participants successfully completed 2 modular forecasting approach
- Each participant produced 2 sets of multi-method quantification exercises – (dummy data) Manual data entry and how to import data into ForLab
- All participants successfully created 3-method forecast
- Participants learnt about how to select appropriate method
- Pretest = 13.63 / Post-test = 17.85

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Training Outcome – Forecast comparison (Anyland)



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Data and assumptions used to forecast HIV and AIDS lab products in Cameroon

	Dec-13	Dec-14	Dec-15	Dec-16	Dec-17
ART Patients	131,531	147,476	156,948	172,462	187,975
Pre-ART Patients	32,883	36,869	39,237	43,116	46,994

- Lab monitoring patients : 80% on ART and 20% on Pre-ART
- Adult 96%/Pediatric 4%
- HIV prevalence = 4.3%
- Attrition rate among ART patients and Pre-ART patients = 30%
- HIV + diagnose to depart w/out follow-up = 25%
- Migration from Pre-ART to ART = 10%
- Symptom-directed tests/year = 2%
- Repeated tests/year = 10%
- Wastage rate = 5% (Rapid Test, CD4, Viral load) / 10% (Hematology, Chemistry)

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Testing Protocol

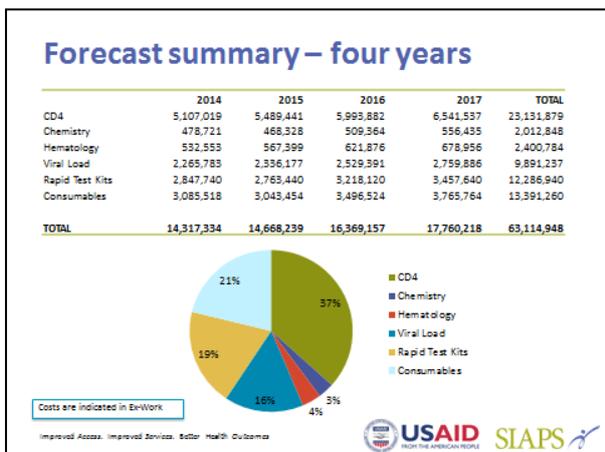
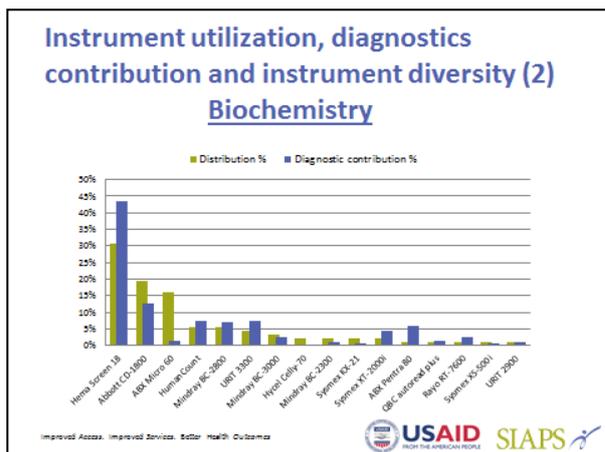
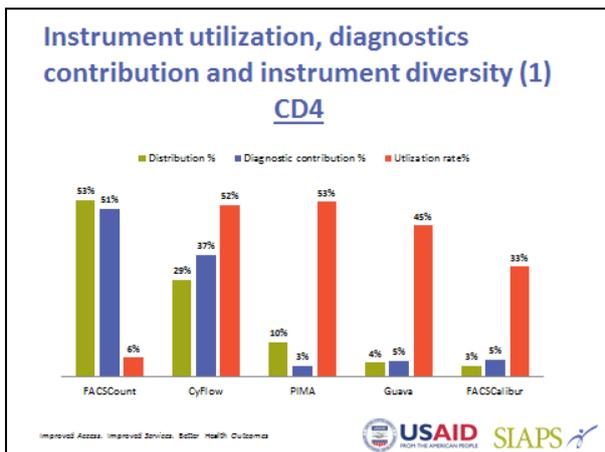
ART-Patients	Baseline	M6	M12	After 1 year
CD4	X	X	X	2
NFS	X	X	X	2
Glucose	X	X	X	2
Creatinine	X	X	X	2
ALT	X	X	X	2
AST	X	X	X	2
Charge virale (30%)		X	X	1

Pre-ART Patients	Baseline	M6	M12	After 1 year
CD4	X	X	X	2

- Screening Test = Determine
- Confirmatory Test
 - ✓ ImmunoComb 20%
 - ✓ KHB Shangai 80%

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- ### Challenges
- Inadequate coordination between donor agencies and government on equipment donations
 - Lack of service contracts for equipment
 - Frequent Machine down especially CD4 and hematology platforms
 - Consequence over stock creating expiries
 - No communication between procurement entity and testing centers
 - Gap between clinicians and Lab personnel
 - Clinicians not sticking on the testing protocol
- Improved Access, Improved Services, Better Health Outcomes

- ### Challenges
- Poor record keeping – no appropriate tools
 - Availability of quality data and accessibility of data
 - Reports not regularly sent to the central level and back to the facility levels
 - Information sharing among key partners to identify common challenges
 - Data analysis and use
 - Monitoring and evaluation
- Improved Access, Improved Services, Better Health Outcomes

- ### Way forward
- Recommends positioning of ForLAB tool at NACP for technical and roll out oversights.
 - Ownership and application of the tool in all National Forecasting and Quantification Exercises
 - Recommends harmonization and standardization of lab diagnostic instruments and equipment
 - Re-design of Lab LMIS to improve collection of Lab logistics data
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Way forward

- Review HMIS tools to improve collection and reporting of data needed for lab quantification
- Initiate strategic discussion between CDC, CHAI, ESTHER, MoH/CNLS and all other in-country lab folks to discuss about
 - Viral load testing (Targets?, accessibility?)
 - CD4 testing with PIMA (which patients? PMTCT or all patients?)
 - Early Infant diagnosis (which platform to use? Roche Amplifier DNA PCR will be discontinued)

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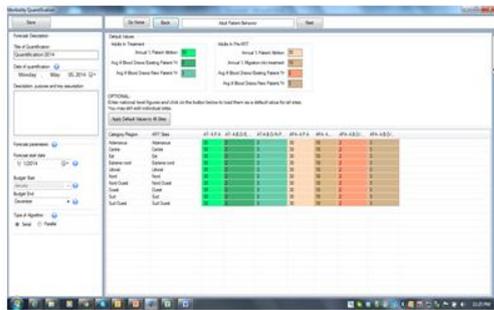
Scenes from the training – Patients trend & Tests#



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Scenes from the training – Adult patient behavior



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Scenes from the training – Group work



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Scenes from the training – Pre-test



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Scenes from the training – reading of participant's manual



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